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ACROSS GREENLAND

VOL. I.

PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
LONDON

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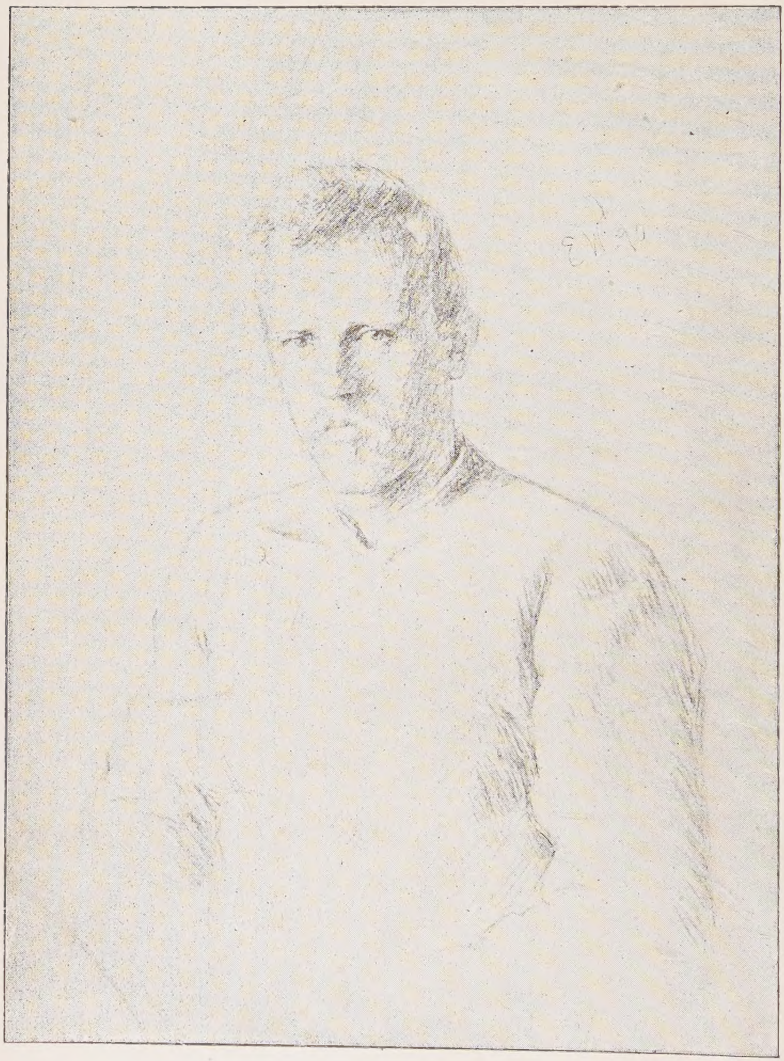

Fridtjof Nansen

THE FIRST CROSSING

OF

GREENLAND

BY

FRIDTJOF NANSEN

TRANSLATED FROM THE NORWEGIAN

BY

HUBERT MAJENDIE GEPP, B.A.

LECTURER AT THE UNIVERSITY OF UPSALA

436.106

WITH MAPS AND NUMEROUS ILLUSTRATIONS

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IN TWO VOLUMES—VOL. I.
OF THE
CITY OF BOSTON

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TO

MY FIVE COMRADES

IN TOKEN OF GRATITUDE

AND

GOOD-FELLOWSHIP

INTRODUCTION

My friend Dr. Nansen has done me the honour to ask me to write an Introduction to the narrative of his journey across the Inland Ice of Greenland. Dr. Nansen has told so fully the story of his own work and of the work of those who have preceded him in the exploration of Greenland, that he has left nothing to say in that direction. He himself hardly requires to be introduced to the British public. His stalwart figure was one of the most prominent objects in the streets and drawing-rooms of London in the summer of 1889; and many must have heard him tell the story of his adventures at the meetings of the Royal Geographical Society and the British Association. It is unnecessary, and it would scarcely be appropriate, for me to say anything in praise either of Dr. Nansen's wonderful journey or of the

full narrative which follows, and which will be found to contain much that will interest both the student of science and the ordinary intelligent reader. Dr. Nansen has taken as much pains with his book as he took with the preparations for his hazardous journey.

As Dr. Nansen is likely to come even more prominently before the world in the future than he has done in the past, probably the best service I can render him and his readers will be to give a few details of his career previous to his entering upon the undertaking the story of which is told in the present volume.

Fridtjof Nansen was born at a farm about two miles from Christiania on October 10, 1861. His father, who was a lawyer, lived there for fifteen years after Fridtjof was born, when he removed into town. Young Nansen began his career as a 'skilöber' (snow-shoer) when he was four years old, and in time became known as one of the most accomplished athletes in this and other respects in Norway. In skating, shooting, and other sports he became as efficient as he was on the 'ski.' From the time he was seven years old he, along with his younger brother, walked to Christiania to school

daily in all sorts of weather. In 1880, when Nansen was eighteen years old, he entered the University of Christiania, and soon manifested a special liking for scientific studies. He determined to devote himself to Zoology, and, as he tells in his book, in order to investigate the animal life of the Arctic regions, he went in the Norwegian sealer 'Viking' to the seas between Spitzbergen, Jan Mayen, and Greenland. The cruise lasted five months, during which Nansen shot about five hundred large seals and fourteen polar bears. As will be seen in Chapters I. and X., the 'Viking' got fast in the ice off the east coast of Greenland, and it was then that the idea occurred to Nansen that it would be practicable to land on the coast and cross the Inland Ice. Immediately after he returned from this trip he was appointed Curator of the Bergen Museum, which position he held till 1888, when he started on the expedition which brought his name so prominently before the world. During this time he was engaged in completing his university career and in carrying on zoological investigations, the principal results of which are embodied in the following memoirs:—

'Bidrag til Myzostomernes Anatomi og Histologi' ('Contribution to a Knowledge of the Anatomy

and Histology of the Myzostomida'), Bergen, 1885. (Rewarded with the gold medal of the Museum.)

A memoir on the same subject was contributed to the Jena 'Zeitschrift für Naturwissenschaft,' Band XXI. Jena, 1887.

'The Structure and Combination of the Histological Elements of the Central Nervous System,' pp. 200, eleven double plates, in the Bergen Museum 'Aarsberetning' for 1886. Bergen, 1887. (For this memoir Nansen received his doctor's degree.)

Thus it will be seen that both by physical training and by the habit of scientific research Dr. Nansen is well qualified for the task of exploration; his narrative will show that he is equally skilful in the use of his pen. Upwards of a year ago he married a daughter of the late Professor M. Sars, like his well-known son Professor O. Sars, an eminent naturalist; among many other accomplishments, Fru Nansen is probably the most skilful lady snow-shoer in Norway.

With regard to the great Polar expedition, for which Dr. Nansen is now making preparations, much could be said. There are sure to be differences of opinion as to the best route; but Dr. Nansen has already shown such excellent judgment in connexion

with the Greenland expedition, and is so well informed as to all that has been done in the past in the way of Polar exploration, that we may feel confident that whatever route he selects will have been adopted only after the fullest consideration of every contingency. Everyone will wish him success in the great and hazardous expedition on which he will enter in 1892.

J. SCOTT KELTIE.

Savile Row, London, W.
October 1890.

AUTHOR'S PREFACE

I FEEL that I cannot send this book out to meet its fate without attaching to it a hearty expression of my gratitude to all those who gave their help to the expedition with which it is concerned.

Among these I must assign a prominent place to Herr AUGUSTIN GAMÉL, in virtue of the ready liberality with which he offered his support to an undertaking which was very generally considered to be the scheme of a lunatic. And after him I must thank the Committee of the Norwegian 'Studentersamfund,' or 'Students' Union,' who organised the collection of, and the large number of my countrymen who contributed to, the considerable sum which I received on my return home in defrayal of the outstanding expenses of the expedition. And,

lastly, I must acknowledge the kindness of all the Danish officials with whom we came in contact, both in Denmark and Greenland, as well as the unbounded hospitality with which we were treated on all sides.

But my chief thanks are nevertheless owing to my five comrades, to whose combined efforts the successful result of our undertaking is of course mainly due. Everyone who has conducted an expedition will know how ready the world is to do the great injustice of heaping the whole praise or blame for its success or failure on the shoulders of the leader alone. And this injustice is greater than usual in the case of an expedition like ours, in which each member serves as one of a team of draught cattle, and the result of which cannot therefore be dependent on the efforts of a single individual.

My comrades, too, I must thank for the terms of good-fellowship on which we lived and for the many pleasant hours we spent together in spite of ungenial surroundings. On these hours I have often dwelt with peculiar fondness in the course of my narrative. I have once more called to life many a

little incident, which to others indeed may seem trivial, but which has a special value to us. If in so doing I have been induced to extend my tale to undue length, I must ask the good reader to bear with me if he can; and if not, to remember that here at least all the blame must be laid on me and me alone.

FRIDTJOF NANSEN.

Lysaker, Christiania:
October 1890.

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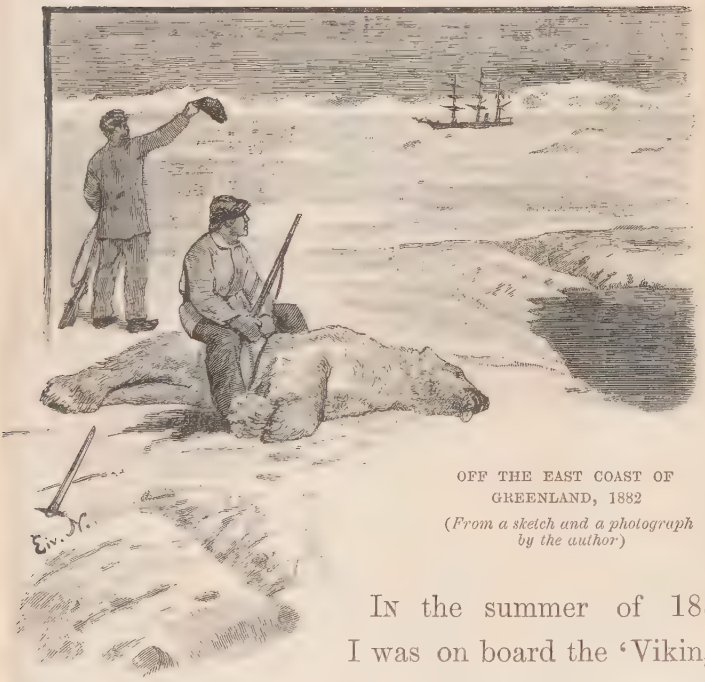
THE FIRST CROSSING OF GREENLAND

CHAPTER I

INTRODUCTION



OFF THE EAST COAST OF GREENLAND, 1882

(From a sketch and a photograph by the author)

In the summer of 1882 I was on board the 'Viking,' a Norwegian sealer, which was caught in the ice off that part of the east coast of Greenland which is still unexplored or,

more precisely, somewhere in the neighbourhood of lat. 66° 50′ N. For more than three weeks we were absolutely fixed, and every day, to the terror of the crew, we drifted nearer to the rocky coast. Behind the fields of floating ice lay peaks and glaciers glittering in the daylight, and at evening and through the night, when the sun sank lowest and set the heavens in a blaze behind them, the wild beauty of the scene was raised to its highest. Many times a day from the maintop were my glasses turned westwards, and it is not to be wondered at that a young man's fancy was drawn irresistibly to the charms and mysteries of this unknown world. Unceasingly did I ponder over plans for reaching this coast, which so many had sought in vain, and I came to the conclusion that it must be possible to reach it, if not by forcing a ship through the ice, which was the method tried hitherto, then by crossing the floes on foot and dragging one's boat with one. One day, indeed, I incontinently proposed to make the attempt and walk over the ice to shore alone, but this scheme came to nothing because the captain conceived that he could not in the circumstances allow anyone to leave the ship for a length of time.

On my return I was asked to write an article in the Danish 'Geografisk Tidskrift' (vol. vii., p. 76), and in this I expressed it as my opinion that it would

be possible to reach the east coast of Greenland without any very great difficulty if the expedition forced their way as far as practicable into the ice on board a Norwegian sealer, and then left the ship and passed over the floes to shore. I will not say that I had not at this time some notion more or less visionary of penetrating from the coast into the interior, but it was not till a later occasion that the idea took a definite form.

One autumn evening in the following year, that is to say, 1883—I remember it still as if it were only yesterday—I was sitting and listening indifferently as the day's paper was being read. Suddenly my attention was roused by a telegram which told us that Nordenskiöld had come back safe from his expedition to the interior of Greenland, that he had found no oasis, but only endless snowfields, on which his Lapps were said to have covered, on their 'ski,'[1] an extraordinarily long distance in an astonishingly short time. The idea flashed upon me at once

[1] As these implements and their use will be treated of at length in Ch. III., it will only be necessary here to introduce the terms to the reader. 'Ski' (pl. 'ski' or 'skier'), literally a 'billet' or thin slip of wood, and connected etymologically with the Eng. 'skid' and 'shide,' is the Norwegian name for the form of snowshoe in general use among the northern nations of the Old World. The pronunciation of the word in Norway may be considered practically identical with the Eng. 'she.' The compounds of the word which will occur in the course of the narrative are 'skilöber,' a snowshoer, and 'skilöbning,' snowshoeing, both formed from the verb 'löbe,' to run. The only reason why the

of an expedition crossing Greenland on 'ski' from coast to coast. Here was the plan in the same form in which it was afterwards laid before the public and eventually carried out.

My notion, put briefly, was that if a party of good 'skilöbers' were equipped in a practical and sensible way, they must get across Greenland if they began from the right side, this latter point being of extreme importance. For if they were to start, as all other expeditions have done, from the west side, they were practically certain never to get across. They would have all the flesh-pots of Egypt behind them, and in front the unexplored desert of ice and the east coast, which is little better. And furthermore, if they did get across, they would have the same journey back again in order to reach home. So it struck me that the only sure road to success was to force a passage through the floe-belt, land on the desolate and ice-bound east coast, and thence cross over to the inhabited west coast. In this way one would burn all one's ships behind one, there would be no need to urge one's men on, as the east coast would attract no one back, while in front would lie the west coast with all the allurements and

established English term 'snowshoe' should not have been employed throughout is that this course would have led to inevitable confusion with the very dissimilar Indian snowshoe, of which also frequent mention is made.

amenities of civilisation. There was no choice of routes, 'forward' being the only word. The order would be:—'Death or the west coast of Greenland.'

Next year I expounded my plan in a letter to an acquaintance in Denmark, and proposed a combined Danish and Norwegian expedition to the east coast of Greenland. The Danes were to explore the coast, while the Norwegians were to cross over the 'Inland ice'[1] to the western side. Whether this letter reached its destination I have never learned. I, at least, never heard anything further, and, as I was much occupied in other directions, the matter remained at rest for some years. Not till the autumn of 1887 did I resolve to give my serious attention to the scheme. My original idea had been to carry out the expedition with private means, but, as I was strongly urged on more than one side to apply to the Norwegian University for the necessary funds, in order to give the expedition a more public and national character, I consented, and sent to the authorities an application for a grant of 5,000 kroner, or rather more than 275*l.*, in aid of a journey on the lines I have already described. My application

[1] The term 'Inland ice' has been adopted directly from the Danish 'Indlandsis,' which is the accepted geographical name for the ice-mantle covering, or supposed to cover, the whole interior of Greenland.

received the warmest support from the University Council, and was passed on to the Government for their consideration, and in order that the proposal might be laid by them before the 'Storthing,' or National Assembly, in the regular manner. The Government, however, answered that they could not see their way to give the scheme their support, and one of the newspapers even went so far as to maintain that there could be no conceivable reason why the Norwegian people should pay so large a sum as 5,000 kr. in order to give a private individual a holiday trip to Greenland. Most people who heard of the scheme considered it simple madness, asked what was to be got in the interior of Greenland, and were convinced that I was either not quite right in the head or was simply tired of life. Luckily it was not necessary for me to procure help from Government, 'Storthing,' or anyone else.

At this time I received an offer from a gentleman in Copenhagen to provide the sum for which I had applied to Government. This was Herr Augustin Gamél, who had already contributed to the cause of Arctic research by the equipment of the 'Dijmphna' expedition.[1] This offer, coming as it did from a

[1] The 'Dijmphna' was a Danish vessel fitted out by Herr Augustin Gamél, of Copenhagen, in 1883. The expedition was under the command of Lieutenant Hovgaard, and its object was to reach the North Pole past the western side of Franz Joseph Land. The 'Dijmphna'

foreigner, and one quite unacquainted with me personally, and in aid of an expedition which was generally considered to be the scheme of a madman, seemed to me so truly generous that I could not for a moment hesitate to accept it.

I first published my plan in January 1888 in the Norwegian Magazine 'Naturen,' in an article entitled 'Grönlands Indlandsis.' Having given some account of the earlier attempts to penetrate to the interior of Greenland, I continued :—'My plan, described briefly, is as follows : With three or four of the best and strongest "skilöbers" I can lay my hands on, I mean to leave Iceland in the beginning of June on board a Norwegian sealer, make for the east coast of Greenland, and try in about lat. 66° N. to get as near to the shore as possible. I should have liked to land farther north in the unknown regions of Scoresby Fjord, but for this it would be necessary to hire a special vessel, and, as it would probably be difficult to raise funds for this purpose, I have for the present given up this idea. If our vessel is not able to reach the shore, though the sealers, who have often been close in under this unexplored coast, do not consider such a thing improbable, the expedition will leave the ship at the farthest point that can

was frozen fast in the ice of the Kara Sea while attempting to rescue another vessel, the 'Varna,' and was obliged to return home the following year.

be reached, and will pass over the ice to land. In the summer of 1884, for instance, there was extremely little ice, and the seal were taken almost close under the shore. For the purpose of crossing the open water which will probably be found near the coast, a light boat will be dragged on runners over the ice. That such a crossing of the ice is possible, I feel I can assert with confidence from my previous experience. When I was in these regions in 1882 on board the "Viking," and we were caught in the ice, and drifted for twenty-four days along the very coast where I now intend to land, I had numerous opportunities while out shooting and for other purposes of becoming familiar with the nature of the ice and conditions of snow, and besides we were often obliged by sudden "nips," or jamming of the ice, to drag our boats over the floes for considerable distances. I therefore think there is every probability of our being able to reach land in this way. I should like it to be for preference somewhat north of Cape Dan, where the coast has never yet been explored by Europeans, and offers in itself much of interest to the traveller. To the south the coast is now comparatively well known, as the Danish "Konebaad" expedition,[1] under Captain Holm, in 1884 reached a

[1] The Danish 'Konebaad' expedition to the east coast of Greenland was under the command of Captain G. Holm and Lieutenant V.

point to the north of Cape Dan, and wintered at Angmagsalik, a colony of heathen Eskimo, in the neighbourhood of the cape. After having examined the coast as far as the time at our disposal will allow, we shall begin the crossing of the "Inland ice" at the first opportunity. If we reach land to the north of Cape Dan, we shall begin the ascent from the end of one of the fjords close by; if we land farther south, we shall push up to the end of Sermilikfjord before we take to the ice.

'We shall try at once to climb as high as possible on the bare rock, even if the gradient be considerably steeper; for, when we are eventually obliged to take to the ice, we shall thus find it flatter and smoother, and shall escape the worst ice-falls of the glaciers, which with their crevasses and general roughness would be likely to prove troublesome and dangerous. Once upon the ice, we shall set our course for Christianshaab, on Disco Bay, and try to reach our destination as soon as possible. The advantage of making for

Garde, and was engaged in exploration from 1883 to 1885. During the summer of 1884 Captain Holm, with the Norwegian geologist Knudsen and a section of his party, penetrated to the hitherto unknown region of Angmagsalik and Cape Dan, where they spent the following winter. 'Konebaad,' literally 'woman-boat,' is the Danish equivalent for the Eskimo 'umiak,' the native skin-boat, which is always manned by women. The expedition here referred to made use of these 'umiaks' and Eskimo rowers entirely, as at that time it was considered that the ice-belt of the east coast could only be navigated in this way.

Disco Bay instead of taking a point farther south is that we shall probably find the snow in better condition farther north. And besides, by Disco Bay, where the land is not much cut up by fjords, it will be comparatively easy for us to find our way to habitations, while Disco Island, which lies off the coast, and will be visible to us with its terraced basalt cliffs, will prove a good landmark and help us to find one of the two colonies, Jakobshavn or Christianshaab, which lie on Disco Bay about thirty-five miles apart.

'The distance from the point on the east coast where I intend to land to Disco Bay is about 670 kilomètres or 420 miles. If we calculate that we shall be able to cover on a daily average from fifteen to twenty miles, which is exceedingly little for a "skilöber," the crossing will not take more than a month, and if we carry with us provisions for double that time there seems to be every probability of our success.

'The provisions will have to be hauled on sledges of one kind or another, and besides the "ski" we shall also take "truger," the Norwegian counterpart of the Canadian snowshoe, which may serve our purpose better when the snow is wet and soft. We shall also, of course, take the instruments necessary for observations . . . . &c. &c.'

It is not to be wondered at that several more or

less energetic protests against a plan of this kind appeared in the newspapers, but they were one and all distinguished by an astonishing ignorance of the various conditions of, and the possibility of passage over, extensive tracts of ice and snow.

In this connexion I cannot deny myself the pleasure of reproducing some portions of a lecture delivered in Copenhagen by a young Danish traveller in Greenland, and printed in the Danish magazine 'Ny Jord' for February, 1888. 'Other plans,' the lecturer says, 'have never passed beyond the stage of paper, like the proposals to cross the "Inland ice" in balloons, which were brought forward at the end of the last century. And among these paper-schemes we must include the proposal which has just emanated from the Norwegian zoologist, Fridtjof Nansen, of the Bergen Museum.' . . . 'There is much that is attractive in the fundamental idea of Nansen's scheme, in his proposal to start from the east coast, and cross to the colonies on the other side instead of taking the reverse way, and in his intention, he being a good "skilöber" himself, to make "ski" his means of conveyance. But all who acknowledge the merits of the fundamental idea must, if they know anything of the real condition of things, refuse any further sanction to the scheme. The very method by which Nansen proposes to reach the coast, that is to say, by

abandoning the firm ship's-deck and creeping like a polar bear from one rocking ice-floe to another on his way to the shore, shows such absolute recklessness that it is scarcely possible to criticise it seriously.'

. . . 'Let us suppose, however, that fortune favours the brave, and that Nansen has reached the east coast of Greenland. How will he now set about getting up on to the real flat expanse of the "Inland ice," or, in other words, how will he pass the outer edge, where peak upon peak rise through the ice-mantle, and in all probability present at nearly every point an impenetrable barrier?' . . . 'Nansen's proposal to climb the high mountains of the coast and from their summits step upon the expanse of ice which is dammed up against them thus betrays absolute ignorance of the true conditions.' . . . . 'With what can be seen from the shore my experience ends, and I will not attempt to criticise the idea of crossing the inner tract of ice on "ski," or the possibility of taking enough provisions, or any similar questions. But I think that there is a probability that this part of the scheme may be carried out if Nansen can once pass the outer edge of the ice.

'But there is one very different question on which I think I am not only qualified but bound to speak. And I say that, in my opinion, no one has the moral

right, by setting out upon a venturesome and profitless undertaking, to burden the Eskimo of Danish East Greenland with the obligation of helping him out of the difficulty into which he has wantonly thrust himself. The few of us who know anything of the condition of things in East Greenland have no doubt that if Nansen's scheme be attempted in its present form, and the ship does not reach the coast and wait for him till he has been obliged to abandon his design, the chances are ten to one that he will either uselessly throw his own and perhaps others' lives away, or that he will have to take refuge with the Eskimo and be conducted by them along the coast down to the Danish colonies on the western side. And I say that no one has a right to force upon the East Greenlanders a long journey, which will be in many ways injurious to them.'

There is no doubt that these passages were written with every good intention, but they are, nevertheless, characteristic specimens of the almost superstitious terror with which many people, and among them some who pose as authorities, and claim to have special knowledge of the subject, have regarded the 'Inland ice' of Greenland and the passage of tracts of ice and snow generally, even in these latter days. The writer of the above article had himself in the course of several years' exploration passed along the edge of the 'Inland

ice,' but it seems never to have entered into his head to make a little incursion into the interior. The first few steps would certainly have cleared his mind of some of his absurd hallucinations, and he would eventually have learned what an 'absolute ignorance of the true conditions' really means.

In another article, which betrays, if possible, even less knowledge of the subject, the writer declared that even if Nansen himself were mad enough to make any such attempt he would not get a single man to accompany him.

In England, too, the press delivered itself of several articles adverse to the plan of the expedition.

But, in spite of these warning voices and in spite of the general opinion that the whole scheme was simple madness, there were, nevertheless, plenty of men who wished to join me. I received more than forty applications from people of all sorts of occupations, including soldiers, sailors, apothecaries, peasants, men of business, and University students. There were many others, too, who did not apply, but who said they were more than eager to go, and would have sent in their names, had it been of the slightest use. Nor were these applicants all Norwegians, for I received many letters, too, from Danes, Dutchmen, Frenchmen, and Englishmen.

I could, however, take none who were not tho-

roughly accustomed to the use of 'ski,' and men, too, of proved energy and endurance. Finally, I chose three Norwegians: Otto Sverdrup, a retired ship's captain; Oluf Dietrichson, First-lieutenant in the Norwegian Infantry; and Kristian Kristiansen Trana, a peasant from the north of Norway.

As I had originally thought of taking reindeer, and imagined, besides, that some Lapps would be of use to me, as possessing that sense of locality and power of adaptation to all sorts of circumstances which such children of nature have as a common birthright, I had written to two well-known men living in Finmarken, asking them if they could find me a couple of Mountain-Lapps[1] willing to join the expedition. I stipulated that they should be plucky men, who were known to be clever mountaineers and to possess powers of endurance above the average;

[1] As many who have travelled in the north of Norway and Sweden will know, the Lappish population falls into several more or less distinct divisions. The most interesting section, the real nomadic Lapps of the reindeer-herd and skin-tent, form as a matter of fact a small part of the whole. They are commonly known in Norway as 'Fjeldlapper' ('Mountain-Lapps'), and it was from among them that I had intended to take my two men. Far the greater number of the Lapps are settled either on the Norwegian coast as 'Sölapper' ('Sea-Lapps'), where they maintain themselves chiefly by fishing; or in the interior, at such villages or centres as Karasjok, Kautokeino, Jokkmokk, Kvickjock, and Karesuando, as well as in most of the upper valleys of northern Sweden. The 'Elvelapper' ('River-Lapps'), to whom I refer below in connexion with Balto's origin, are merely a small colony settled by the river Tana, and are, as I have said, supposed to be of mixed Lappish and Finnish blood.

that they should be made fully aware beforehand of the dangerous nature of the undertaking, and that the fact must be clearly impressed upon them that there was just as much probability of their never returning home again as of surviving. And I further added that they must be unmarried men of an age between thirty and forty, as I considered that at this time of life the powers of both body and mind are best prepared to meet the trials of such an undertaking.

It was a long time before I received an answer to my inquiry. The post among the inland districts of Finmarken is leisurely, and is taken across the mountains in reindeer sledges every fortnight. At last when the time fixed for our start was approaching I received an answer telling me that I could have two good men from Karasjok, if I was willing to pay them handsomely. I accepted their terms and telegraphed to them to come at once. The next thing I heard was that they were on the way and would arrive on such and such a day. I was exceedingly anxious to see them, of course. They were expected one Saturday evening, and I had some people down at the station to meet them and take them to their lodgings. But no Lapps arrived that day or on Sunday either, and we all wondered what had become of them. Then on Monday I was told that they really

had come, and so indeed they had, but by a goods train instead of the ordinary express for passengers. I hurried down to their lodgings at once, found their door, and, as I entered, saw standing in the middle of the room a good-looking young fellow, but more like a Finn than a Lapp, and away in the corner an old man with long black hair hanging about his shoulders, small in stature, and looking more stunted still as he sat huddled up on a chest. He had a much more genuine Lappish look about him than the other. As I came into the room the elder man bent his head and waved his hand in the Oriental manner, while the younger greeted me in the ordinary way. The old fellow knew very little Norwegian, and most of my conversation was with the younger. I asked them how they were, and why they came by the goods train. 'We do not understand trains,' answered he, 'and, besides, it was a little cheaper.' 'Well, how old are you both?' 'I am twenty-six, and Ravna is forty-five,' was the answer. This was a pretty business, for I had stipulated that they should be between thirty and forty. 'You are both Mountain-Lapps, I suppose?' 'Oh no! only Ravna; I am settled at Karasjok.' This was still worse, as I had made a point of their being Mountain-Lapps. 'But are not you afraid to go on this trip?' said I. 'Yes, we are very much afraid, and people have been telling us on the way

that the expedition is so dangerous that we shall never come home alive. So we are very much afraid, indeed!' This was really too bad, for the poor fellows had never even been told what they had undertaken to do. I was very much inclined to send them back, but it was too late to get anyone else to take their place. So, as I had to keep them, it was best to console them as well as I could, and tell them that what people had been saying was all rubbish. It was no manner of use to discourage them at the outset, for they were likely to lose their spirits quite quickly enough anyhow. Though they did not perhaps look quite so strong and wiry as I could have wished, still they seemed to be good-natured and trustworthy fellows. These qualities, indeed, they have shown to the utmost, and in endurance they have proved little, if at all, inferior to us. In other respects I found them of no particular use, as far as the accomplishments which I expected to find in them are concerned, and, as a matter of fact, they were never used for reconnoitring purposes.

Balto, my younger Lapp, on his return home wrote a short account of his experiences while he was away. This has been translated into Norwegian from the original Lappish by Professor Friis, of Christiania, and I propose to include in my narrative those passages of his which seem to me most characteristic

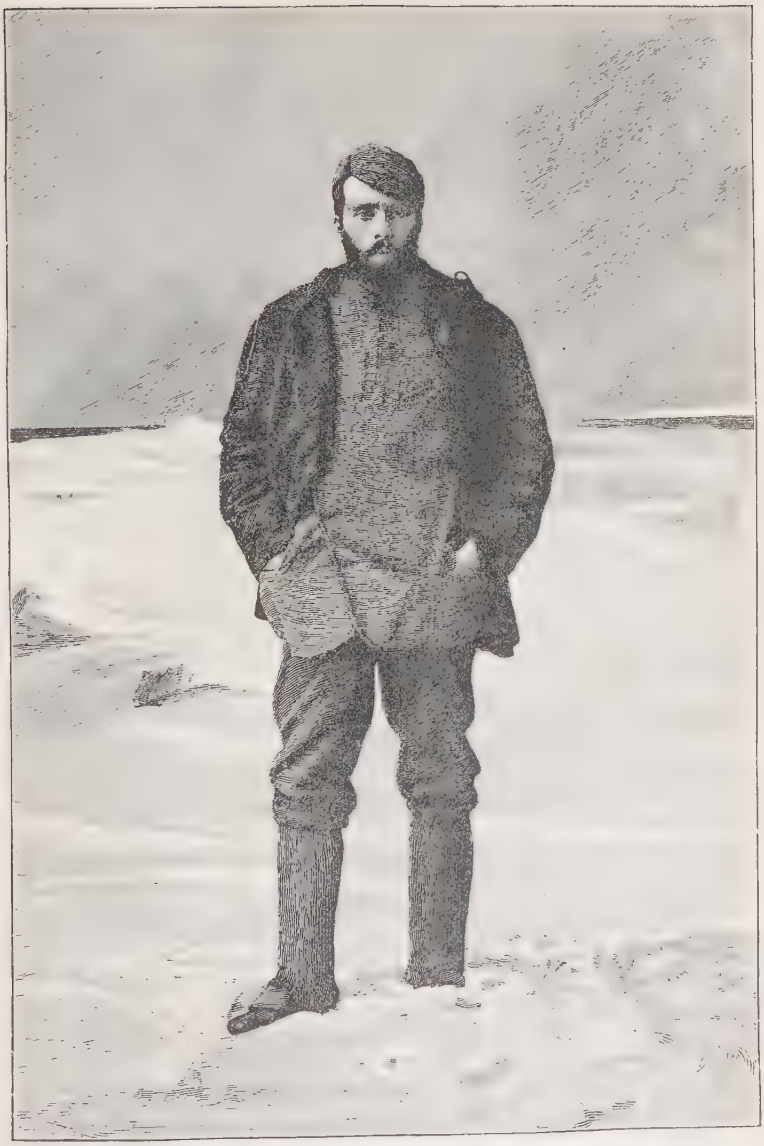
and likely to afford most interest to the general reader. After describing his voyage from Finmarken and telling how people on the way discouraged them and informed them, among other things, that I was a simple maniac, he continues :—'On April 14th we left Trondhjem and reached Christiania on the 16th. Nansen had sent a man to the railway station to meet us. This was Sverdrup, who came up to us and asked : "Are you the two men who are going with Nansen ?" We answered that we were the two. Sverdrup then told us that he was going with Nansen too, and had come on purpose to meet us. "Come along with me," he said ; and he took us to a hotel, which is in Toldbodgaden, No. 30. An hour afterwards Nansen and Dietrichson came to see us. It was a most glorious and wonderful thing to see this new master of ours, Nansen. He was a stranger, but his face shone in our eyes like those of the parents whom we had left at home ; so lovely did his face seem to me, as well as the welcome with which he greeted us. All the strange people were very kind and friendly to us two Lapps while we were in Christiania town, and from this time we became happier and all went well with us.'

As through the whole course of my narrative we shall have the company of the five men I have already mentioned, the most fitting thing I can do will be to

present them duly to the reader with some short account of the antecedents of each. I will begin with my own countrymen and take them in the order of their age.

Otto Sverdrup was born on October 31, 1855, at the farm of Haarstad, in Bindalen, in Helgeland. His father, Ulrik Sverdrup, a member of an old Norwegian family, was an owner of farm and forest property. Accustomed from childhood to wander in the forest and on the mountains on all kinds of errands and in all sorts of weather, he learned early to look after himself and to stand on his own legs. Early, too, he learned to use his 'ski,' and a rough and impracticable country like that of Bindalen naturally made him an active and clever 'skilöber.'

At the age of seventeen he went to sea and sailed for many years on American as well as Norwegian vessels. In 1878 he passed the necessary examination in Christiania and sailed as mate for several years, being during this period once wrecked with a Norwegian schooner off the west coast of Scotland. On this occasion he showed to the full the sort of stuff he was made of, and it was mainly his coolness and perseverance which saved his crew. Since this he has sailed as captain on a schooner and a steamer, and one year spent the fishing season with a smack



OTTO SVERDRUP

on the banks off the coast of Nordland. Of late years he has for the most part remained at home with his father, the latter having meanwhile sold his property in Bindalen and moved southwards to the farm of Trana, near Stenkjer. Here he has spent his time at all sorts of work, in the forest, on the river, floating timber, in the smithy, and fishing at sea, where as boat's-captain he was unsurpassed.

Some years ago a man was wanted at Gothenburg to take charge of the Nordenfeldt submarine boat which was to be taken across the North Sea to England. A reward was offered, but no one was found willing to undertake this risky task. Sverdrup at this juncture accidentally appeared, and he offered his services at once. He prevailed upon a relative to go with him as engineer, and the two proposed to navigate the strange craft across the North Sea without further help. The prospect to Sverdrup was one of pure sport, but at the last moment the authorities changed their minds, and the boat was eventually towed across.

It is plain that a man of this type was specially created for such an expedition as ours. In the course of his vagrant and chequered life he had learned to find his way out of all kinds of difficult situations, and I need scarcely add that we never found him wanting in either coolness or resource.

Oluf Christian Dietrichson was born in Skogn, near Levanger, on the 31st of May, 1856, and was the son of Peter Wilhelm Krejdahl Dietrichson, the official doctor of the district. He was educated at Levanger, Trondhjem, and Christiania, entered the military school as a cadet in 1877, and received a commission as second lieutenant in the Trondhjem brigade in 1880, being promoted to the rank of first lieutenant in 1886. During the present summer he has received his captaincy.

He has all his life been a keen sportsman, and by good physical training he has hardened and developed his naturally strong and well-built frame. Of late years he has every winter gone long tours on 'ski' through the greater part of Southern Norway, has passed through most of our valleys, from Skien in the south to Trondhjem in the north, and there are not many who have seen so much of the country in its winter aspect as he.

The acquirements of his military education stood the expedition in good stead. He undertook our meteorological diary practically single-handed, and the results of our surveys and our maps are due to him. He discharged these duties with an amount of zeal and self-denial which are more than admirable, and the merit of such work as he produced in such circumstances will only be appreciated by those who

OLUF CHRISTIAN DIETRICHSON

have had a similar experience. To take observations and keep a meteorological diary with the usual exactitude and punctuality, when the temperature

KRISTIAN KRISTIANSEN TRANA

is below — 20° F., when one is dead-tired, or when death and destruction are at hand: or to write when the fingers are so injured and swollen by the frost that it is almost impossible to hold a pencil, needs an

amount of character and energy which is far from common.

Kristian Kristiansen Trana was no more than twenty-four years old when he joined the expedition. This was considerably below the age which I considered most suitable for such a task; but, as he was plucky and strong and unusually eager to go with us, I did not hesitate to take him on Sverdrup's recommendation, and I had no reason whatever to regret my choice.

He was born on February 16, 1865, at a cottage on the farm of Trana, which is now the property of Sverdrup's father. At his home he has been chiefly engaged in forest work, but has been to sea once or twice, and was therefore likely to be a handy man. He proved steady and trustworthy, and when Kristian said that he was going to take anything in hand, I always knew that it would be done.

Samuel Johannesen Balto is a Lapp settled at Karasjok, and was twenty-seven when he joined us. He is of average height, and has none of the outer Lapp characteristics; he belongs, in fact, to the so-called 'River-Lapps,' who are generally people of some size and have much Finn blood in them. He has spent most of his time at forest work, but for several years he has been out in the fishing season, and for a while, too, he has helped to tend reindeer among the

Mountain-Lapps, being for a part of the time in the service of Ravna. He is a lively, intelligent fellow; he did everything he undertook with great energy, and

SAMUEL JOHANNESEN BALTO. OLE NIELSEN RAVNA

in this respect was very different from his companion Ravna. He showed some powers of endurance too, was always willing to lend a hand at any job, and was thus of great use to us. And, lastly, his ready

tongue and broken Norwegian constituted him to a great extent the enlivening spirit of the expedition.

Ole Nielsen Ravna is a Mountain-Lapp from the neighbourhood of Karasjok, and when he joined the expedition was forty-five or forty-six, he not being quite sure of the year himself. He has spent all his nomadic life in a tent and wandered with his reindeer about the mountain wastes of Finmarken. His herd, when he left it for Greenland, was of no great size, and contained from 200 to 300 deer. He was the only married member of the expedition, and left a wife and five children behind him at home. As I have already said, I did not know this beforehand, as I had insisted upon all my companions being unmarried. Like all Mountain-Lapps, he was pre-eminently lazy, and when we were not actually on the move no occupation pleased him so much as to sit quietly in a corner of the tent with his legs crossed, doing absolutely nothing, after he had once brushed himself clean of snow. Rarely indeed was he seen to undertake any work unless he were directly called upon to do so. He was very small, but surprisingly strong, and capable of any amount of endurance, though he always managed to save his strength and reserve his powers. When we started he knew very little Norwegian, but for this very reason his remarks were extremely comical and provided us with plenty

of amusement. He could not write and had no acquaintance with so modern an apparatus as a watch. But he could read, and his favourite book was his Lappish New Testament, from which he was never parted.

Both the Lapps had come, as they declared themselves, merely to gain money, and interest and adventure had no place in their minds. On the contrary, they were afraid of everything, and were easily scared, which is not to be wondered at when it is remembered how very little they understood of the whole business at the outset. That they did not come back so ignorant as they went will be seen from some of Balto's observations, which I shall subsequently quote.

Ravna and Balto were good-natured and amiable; their fidelity was often actually touching, and I grew very fond of them both.

CHAPTER II

THE EQUIPMENT

An expedition such as that which we were about to undertake obviously depends for its success in a large measure upon the equipment, and, indeed, in our own case the lives of the participators would certainly have been sacrificed if there had been any serious failure in this respect. A defective nail or join might have been quite enough to delay our whole progress, and might have led to the gravest consequences. In such circumstances every single article must be conscientiously tested, and changes and inconvenience endured until all is as perfect as human care can make it. All depends upon the observation and consideration of a long series of trifling details, the sum total of which constitutes success—a fact on which too much weight cannot be laid. Yet, as it seems to me, this is a subject which the organisers of many previous expeditions have treated much too lightly.

As I have already said, it was my original intention to take, if possible, dogs or reindeer to drag our

baggage. Plainly the advantage of such a course is considerable if one can only get the animals to the spot where the sledging will begin. Many men of experience have maintained that neither dogs nor reindeer are really any help for long sledging expeditions, because they can only drag their own food for a limited period. There is a chain of argument here which I myself do not understand, for surely, if one cannot use the animals for the whole journey, one can take them as far as their provender lasts and then kill them.

If one has a sufficient number of dogs or deer, and takes as much food for them as they can drag over and above the baggage of the expedition, then one can advance rapidly at the beginning without taxing one's own powers to any extent. At the same time, too, there is this advantage, that one can always procure a supply of fresh meat by slaughtering the animals one by one. For this reason so large a quantity of other food will not be necessary. And so, when one is at last obliged to kill the remaining animals, the expedition ought to have advanced a considerable distance without any exhaustion of the strength of its members, while they the whole time will have been able to eat their fill of good fresh meat. This is an important point gained, for they will thus be able to take up the work as fresh and

strong as when they started. It will no doubt be urged that these advantages will not be gained if dogs are taken. But I can answer from my own experience that hunger is a sufficiently good cook to render dog's flesh anything but unpalatable. The Eskimo indeed reckon it a delicacy, and it is certain that anyone who could not in the circumstances bring himself to eat it would not be a fit person to accompany such an expedition at all.

If I could have obtained good dogs, I should therefore have taken them. Dogs are in some important points preferable to reindeer, because they are much easier to transport and much easier to feed, since they eat much the same as the men; while reindeer must have their own provender, consisting mainly of reindeer-moss, which would be a bulky and heavy addition to the baggage. However, it was quite impossible for me to obtain dogs which I could use in the time at my disposal, and I had to give up this idea. I then thought of reindeer, and not only wrote to Finmarken to make inquiries, but even bought moss for them in the neighbourhood of Röros. But then I found that there would be so many difficulties in connexion with their transportation, and still more when we should have to land them in Greenland, that I abandoned the scheme altogether and determined to be content with men alone.

When every scrap of food on which a man is going to live will have to be dragged by himself, it is a matter of course that good care will be taken to make everything as light as possible and to reduce food, implements, and clothing to a minimum of weight. When one is busy with an equipment of this kind one begins instinctively to estimate the value of a thing entirely with reference to its lightness, and even if the article in question be nothing but a pocket-knife the same considerations hold good. But care must be taken, nevertheless, not to go too far in the direction of lightness, for all the implements must be strong, since they will have to stand many a severe test. The clothing must be warm, since one has no idea what amount of cold it will have to meet; the food must be nourishing and composed of different ingredients in suitable proportion, for the work will be hard—harder, probably, than anything to which the workers have hitherto been accustomed.

One of the most important articles of equipment for a sledge expedition is, of course, the *sledge*. Considering that in the course of time so many Arctic expeditions have been sent out, and especially from England, one would suppose that the experience thus gained would have led to a high development in the form of the sledge. This is, however, not the case;

and it is a matter for wonder, indeed, that polar expeditions so recent as the Second German Expedition of 1869 and 1870 to the east coast of Greenland, the Austrian and Hungarian expedition of 1872–1874 to Franz Joseph Land, and even the great English expedition of 1875 and 1876 under Nares to Smith's Sound, set out with such large, clumsy, and unpractical sledges as they actually took. Certainly the two latest expeditions, that of Greely in 1881–1884 and the rescue party led by Schley and Soley, were better equipped in this respect. The general mistake has been that the sledges have been too heavily and clumsily built, and at the same time too large. And as in addition to this the runners were usually narrow, it is not difficult to understand that these sledges sank deep into the snow and were often almost immovable. Some expeditions have certainly made use of the Indian toboggan, which consists of a single board curved upwards in front. It is generally of birch or some similar wood, and is about eight feet long by eighteen inches or more broad.

Even in the beginning of this century these toboggans were used for Arctic purposes, and Franklin had some on his first expedition. The English traveller, Dr. Rae, and after him Greely, used similar sledges with very low and narrow runners, one on each side. Of course, sledges of

this type ride well and high in loose snow, and are so far good and practical; but when the surface is not very loose they give rise to too much friction, and are comparatively heavy to pull.

Strangely enough, the organisers of few expeditions have thought of placing their sledges on broad runners. Payer, however, in his book upon the Austrian and Hungarian expedition, says that 'broad runners make progress in deep snow much easier'; and he speaks of having them $2\frac{3}{4}$ inches in breadth. We Norwegians look upon this expedient as simply natural, as we are accustomed to our old-fashioned 'skikjælke,' which is a low hand-sledge on broad runners, resembling our ordinary 'ski.' This, too, was my model for the form of sledge which we actually adopted. Our sledge seemed to possess all desirable qualities: it was strong and light, rode high in loose snow, and moved easily on all kinds of surfaces. I based my design partly, too, upon that of the sledge which is described in the narrative of the Greely Expedition, and which was used by the rescue party.

Our sledges were made by a clever and conscientious Norwegian carpenter, who spared no pains to carry out my wishes, or to procure the best possible material. I made numerous experiments and changes, and even undertook a journey on 'ski'

over the mountains from Bergen to Christiania before I finally adopted the pattern we used.

All the woodwork except the runners was of ash, and of as good and tough material as could be procured. And, as picked ash possesses such wonderful strength, we were able to make the upper parts of the sledge light and slender, without reducing their strength too much. The runners of two of the sledges were of elm, and those of the rest of a kind

OUR SLEDGE

of maple (*Acer platanoides*), as these two woods glide remarkably well upon the snow. This, as it happened, was not a point of much importance, because I had the runners shod with thin steel plates, which I had intended to take off when we were once upon the loose snow, but which were nevertheless used the whole way except in the case of one sledge.

The accompanying drawing will no doubt give a sufficiently good idea of the structure of our sledge,

and not much further description will be necessary. No nails or pegs were used, but all the joins were lashed, and the sledges were thus more elastic under shocks and strains which would have often caused nails to start. As a matter of fact, nothing whatever was broken the whole journey through. The sledges were about 9 feet 6 inches long by 1 foot 8 inches broad, while the runners, measured from point to point along the steel plate, were 9 feet $5\frac{3}{4}$ inches. The fact that they were turned up behind as well as in front gave the whole sledge more strength and elasticity, and there was this advantage besides that, had the fore end of a sledge been broken, we could have turned it round and dragged it equally well the other way. The chair-back-like bow which is shown in the drawing was made of a slender bar of ash bent into position. It proved of great service for pushing and steering purposes, especially when we were passing over difficult ground, and were obliged to take two men to each sledge.

The weight of each sledge without the steel runners was about 25 lbs., and with them rather more than 28 lbs. Along the central line of these plates were attached narrow bars of steel with square edges, which were meant to serve as a kind of keel, and to make the sledges steer better on ice and to prevent

them from swerving. This is an important point, for when one is passing among the crevasses of a glacier the swerving of a sledge may take it and its load, and even possibly one or more of the party, down into the depths of the ice. These bars were of excellent service while they lasted, but, as they were exposed to continual shocks and hard wear among the rough ice near the east coast, they were soon torn off, and this was especially the case when we climbed into low temperatures, as the steel then became as brittle as glass. Future expeditions, therefore, which make use of these keels under their runners, ought to have them attached in a different way. The strongest method would be, of course, to have them made in one piece with the steel plates, but in this case there would be the disadvantage that they could not be taken off at will.

As the drawing shows, there was a ridge running along the upper surface of each runner. The runners were made comparatively thin for the sake of lightness, and these extra ridges gave them the necessary stiffness and elasticity.

I had calculated that each sledge should be sufficient work for one man; but, as it is a good thing, when one is on difficult ground, to send one of the party on ahead to explore, and as in loose snow the leader has the hardest work to do, I thought it most

practical to take only five sledges and always put two men to the first.

The advantage of having a number of small sledges instead of one or two larger ones, as has been the plan adopted by so many of my predecessors, seems to me simply obvious. On difficult ground, where the work is hard, it is very troublesome to have to manœuvre large sledges with their heavy loads, and, in fact, we should have often found it a sheer impossibility to advance without unloading and making portages. We, on the contrary, could always put two or three of the party to each sledge and thus push on without any such delay or inconvenience. Sometimes, indeed, we had to carry them bodily, loads and all.

When we proposed to sail our sledges, as we had several opportunities of doing, we simply placed two or three of them side by side, laid some 'ski' or long staffs across them, and lashed the whole fast. For masts we had bamboo poles brought for the purpose, and for sails the floor of our tent and two tarpaulins. With another bamboo out in front, somewhat after the fashion of a carriage-pole, we could hold a good course and make fair progress. Anyone who should equip himself specially for sailing would of course be able to manage things much more easily and successfully than we did. Sailing as a mode of pro-

gression was first tried on the 'Inland ice' of Greenland by the American traveller Peary, and I think that future expeditions will do well to give more attention to the subject than has hitherto been done. I feel sure, too, that this method of getting over the ground may be adopted with advantage on the great snowfields of the Antarctic continent.

The construction of our 'ski,' on which we so much depended, was of as much importance as that of our sledges; but, as I intend to devote an entire chapter to the subject of 'skilöbning' generally, as well as to the part these instruments played in the expedition, I will say no more about them for the present.

We took with us also *Indian snowshoes* and their Norwegian counterpart, the so-called 'truger.' As most of my readers no doubt know, the Indian snowshoe consists of a kind of plaited network of moose- or other sinews stretched upon a frame of ash or some equally tough wood, the whole construction somewhat resembling that of an ordinary tennis-bat. Ours were some 42 inches in length by $15\frac{1}{2}$ inches in breadth.

The Norwegian 'truger' are of much less elaborate structure, and are made of simple osier-work in the form shown by the accompanying illustration. Ours were small, being only $15\frac{1}{2}$ inches in

length and $10\frac{1}{2}$ inches across. These 'truger' are used not infrequently in different parts of Norway both in winter and spring, and on the snow which one finds in the latter season, when 'ski' are scarcely so good for practical purposes, they may be very serviceable. In many districts, however, they are employed more for the aid of horses than men.

'TRUGE' AND 'FINNESKO'

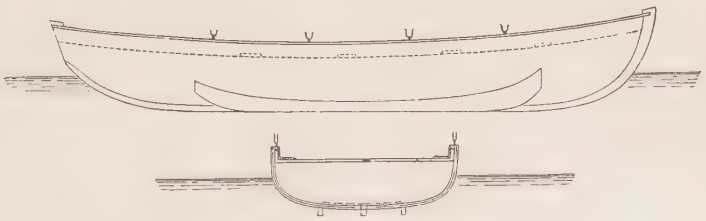
These 'hestetruger' as they are called are of exactly the same pattern, though the manner of attachment of course differs in the two cases. Our little mountain ponies soon become accustomed to these aids to progress, and can therefore be used when the amount or condition of the snow would render the employment of less accomplished animals quite impossible.

It will be understood from what follows hereafter

that all these forms of snowshoe are, for general use, much inferior to our 'ski' on the feet of anyone who is accustomed to the use of the latter. The reason why I took these other implements was because I thought they would be of more service when we had to drag our heavy sledges uphill. We used them for this purpose too—that is to say, I myself and two of the others used the Indian snowshoes; our fourth man could never learn to manage these and took to the 'truger,' though they let him considerably deeper into the snow, while the Lapps expressed a lofty contempt for both kinds and would have nothing whatever to say to them. But it was not long before we all took to our 'ski' for good and found them preferable even for uphill work. These snowshoes have, however, two advantages as compared with 'ski.' When the latter are not covered with skin beneath they are more troublesome to use than snowshoes in mild weather, when the snow is sticky, and they are in any case considerably heavier to carry.

To make sure of getting a serviceable *boat*, which should be light enough to drag over the rough sea-ice and yet not weak enough to succumb to the violent shocks and sudden strains which it was sure to be exposed to among the capricious floes, I had one specially built in Christiania. Its length was

19 feet, its greatest breadth 6 feet, and its depth inside 2 feet. The boarding was double, each jacket being $\frac{3}{8}$-inch thick, the inner of pine, the outer of the best Norwegian oak, the two as carefully riveted together as possible, and the intervening space filled by a layer of thin canvas. The ribs were of bent ash 1 inch broad and $\frac{1}{2}$-inch thick, and were placed at intervals of 6 inches. Below the boat I had, besides the keel, runners of pine added to support it while it was being hauled over the ice. The boat proved a



OUR BOAT

great success; it was strong and elastic enough to resist the pressure of the floes; but for the future I should be inclined to recommend single boarding instead of double, not only because in the former case the boat is easier to repair, but because the intervening space is liable to hold water and increase the weight. Again, I found that the added runners were really of very little use, while they were always liable to get nipped in the ice and thus help to destroy the whole boat.

The *sleeping-bag* is of course a most important article of equipment for all Arctic expeditions. In our case the nature of the material of which the bag should be made needed our best consideration, as it was necessary that it should be at the same time light and sufficiently warm. On previous expeditions sometimes wool and sometimes skins have been used. Wool, of course, lets the perspiration through much more readily, and there is not so much

HALF THE EXPEDITION IN ITS SLEEPING-BAG

condensation of moisture inside as in the case of skin; but, on the other hand, wool has the disadvantage of being very heavy in comparison with the amount of warmth which it affords. For a time I thought of trying woollen bags, but I came to the conclusion that they would not be warm enough, and I now fear that if we had taken them we should have scarcely reached the west coast of Greenland alive.

After several experiments I determined to use

reindeer-skin, as the best material which I could procure in the circumstances. Reindeer-skin is, in comparison with its weight, the warmest of all similar materials known to me, and the skin of the calf, in its winter-coat especially, combines the qualities of warmth and lightness in quite an unusual degree. This particular skin, however, I could not procure in time, and I was obliged to be satisfied with that of the doe, which is considerably heavier. Reindeer-skin has this disadvantage, that the fur does not stand much wear, and the skin, if exposed much to wet, soon loses its hair. From this point of view, dog-skin is a good deal better and stronger, but it gives nothing like the warmth of reindeer-skin. Wolf-skin is still better than dog-skin, and the only objection to it is its cost. However, our reindeer-skin lasted well through the whole journey and the winter on the west coast. It was specially prepared for us by Brandt, the well-known furrier at Bergen, and I had every reason to be satisfied with it.

We took two sleeping-bags, calculated to hold three men each. This proved a thoroughly practical arrangement, since one bag for three men is, of course, much lighter than three, each for a single occupant, and much warmer, too, because the three mutually profit by each other's heat. In this respect one bag for all of us would have been still better, but

I dared not risk the arrangement, for, had the sledge carrying the one bag gone down a crevasse, we should have been left entirely without protection against the low temperature of the nights ; while, as it was, if we had been unlucky enough to lose one of our bags, we should still have had the other left, into which we could have put four men under pressure, and so taken turn and turn about.

Our bags had a hood-shaped flap, which could be buckled over our heads when necessary. As long as the cold was not extreme we found it warm enough with this flap just laid over us ; but when the temperature got lower we were glad enough to have it buckled as tight as the straps would allow, for the aperture still left gave us quite enough ventilation. Very little, indeed, of the cold night-air of the interior of Greenland inside a sleeping-bag is more than sufficient. To protect the bags against outside moisture I had had some covers made of thin oilcloth, but we abandoned these soon after we started across the 'Inland ice.'

As our bags were of reindeer-skin, I did not think it necessary to take india-rubber air mattresses, and, as they are very heavy, it was a great advantage to be able to do without them.

In the way of *clothes* we had, except for a few reserve things, very little but what we were actually

wearing when we left Norway. With the exception of two tunics of reindeer-skin which the Lapps wore, and a little coat lined with squirrel-skin which I took, but scarcely used, we had no furs, but wore woollen things throughout. Next our skins we had thin woollen shirts and drawers, then thick, rough jerseys, and then our outer garments, which consisted of a short coat, knickerbockers, and gaiters. These were all made of a kind of Norwegian homespun, which gave every satisfaction. Whether the work be hard or not, woollen clothes are far the best, as they give free outlet to the perspiration, whereas cotton, linen, or skins would check it. Above all things, we had to take care that we did not get overheated, because the succeeding chill was so likely to lead to freezing. As we got warm we had, therefore, to gradually abandon one garment after another, and we might often have been seen in fifty and sixty degrees of frost working in our jerseys and yet perspiring as on an ordinary summer's day.

In wind, snow, and rain we generally wore outside our other clothes a light suit of some thin, brown, canvas-like stuff. This was reputed completely waterproof, but it turned out to be nothing of the kind. In wind and snow, however, it did excellent service, and we used it often on the 'Inland ice,' as it protected us well against the fine driven snow, which, being of

the nature of dust, forces itself into every pore of a woollen fabric, and then, melting, wets it through and through.

To these canvas coats were attached hoods for the head which were large enough to project well in front of the face. These protected us excellently from the wind, which in a low temperature can be exceedingly trying, not to say dangerous, to one's cheeks and nose.

'LAUPARSKO'

For our *feet* we took, besides ordinary boots, the peculiar form known in Norway as 'lauparsko.' The soles of these latter consist of a piece of pliant leather turned up along the sides and at the toe, and sewn to the upper leather on the upper surface of the foot, much on the same principle as the 'komag' and 'finnesko' of the Lapps and Finns, and the 'kamik' of the Eskimo. I have also seen a shoe of a similar form in Iceland, but there they were ugly and clumsily made in comparison with ours. Inside these

'lauparsko' we wore first a pair of thick, well-shrunk woollen stockings, and over them thick, rough goat's-hair socks, which, in addition to being warm, have the excellent quality, likewise possessed by the 'sennegræs' (*Carex vesicaria*) of the Lapps, of attracting moisture to themselves and thus keeping the feet comparatively dry. These 'lauparsko' are thoroughly adapted for use with 'ski' or snowshoes. They are stronger than 'hudsko,' another Norwegian form of shoe, made of half-tanned or quite raw hide with the hair left on, and 'finnesko,' the ordinary winter-shoe of reindeer-skin used by the Lapps, but are by no means so warm as the latter. Sometimes, indeed, we found it quite difficult to get our feet free of their covering in the evening, as the stockings, socks, and shoes were all frozen hard together. The two Lapps had two pair of 'finnesko' each, as well as one pair which Balto insisted on presenting to me. These 'finnesko' when good are made of the skin of the legs of the reindeer buck, the pieces with the hair on being laid for twenty-four hours or so in a strong decoction of birch or similar bark, or sometimes tanned in tar-water. The skin of the hind legs is used for the soles and sides, and that of the fore legs for the upper leather, the hair being left outside throughout the boot. Similar shoes are made of the skin of the reindeer's forehead and head. These, which are generally called in Norway

'skaller,' from 'skalle,' a skull, are warmer than the other 'finnesko,' but not so strong.

These 'finnesko,' then, which, as I have said, are worn with the hair outside, and which the Lapps fill with the above-mentioned sedge or 'sennegræs,' wrapping their bare feet in the grass and using no stockings, are a pre-eminently warm covering for the feet and very suitable for use on 'ski' or snowshoes. The reason why I had not taken them for our general use was because I supposed we should be much exposed to the wet, which these shoes will not stand. In this respect one has to take very great care of 'finnesko,' or they will soon be spoilt. As a matter of fact we were not much in the wet, and the pair of shoes which Balto gave me I wore nearly the whole way across the 'Inland ice,' as well as during the following winter, and brought them back to Norway with a good deal still left in them. Nor was this all, for they were not new when I got them, as Balto had already used them for a winter. I can therefore speak with confidence as to the suitability of 'finnesko' for such expeditions, and can give them the warmest recommendation. They weigh scarcely anything at all, and one can take a couple of reserve pairs for each of the members of an expedition without feeling the addition. They must, however, as I have already said, be very carefully looked after if they are to be

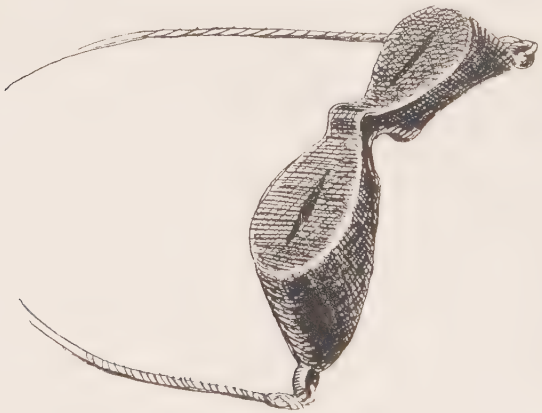
made to last. The best treatment if they are wet when one takes them off for the night is to turn them inside out and then sleep in them. The skin- or inner side is thus dried first, which is an important point, as the hair is otherwise liable to fall out.

On our *hands* we used large woollen gloves, as well as in extreme cold an extra pair of dogskin gloves with the hair outside, both of them having no separate divisions for the fingers. The Lapps used their ordinary gloves of reindeer-skin, which also have the furry side outwards. When these gloves are filled, like the 'finnesko,' with 'sennegræs,' they are exceedingly warm. For use while writing, sketching, and taking observations, we also had ordinary woollen gloves with fingers.

On our heads we wore caps of the costermonger pattern, with flaps for the ears and the back of the neck, and, besides these, hoods of cloth as well as those attached to our canvas jackets. With all these three on we were thoroughly well protected against the severest cold, even when the wind was blowing.

The *spectacles* for prevention of snow-blindness are another important article of equipment for a sledge-expedition. The significance of a trifling addition of this kind was strikingly shown in the case of the Majsejew Expedition to Nova Zembla in 1839, when the want of these glasses proved an obstacle to the

success of the whole undertaking. We used spectacles of dark smoke-coloured glass, some without and some with baskets of plaited wire to protect the eye against light coming from below and the sides. I myself chiefly used a pair of the latter, which had been given me by Nordenskiöld, and which I found excellent. We also used spectacles or eye-protectors of wood with a narrow horizontal slit for each eye, like those



WOODEN EYE-PROTECTORS

commonly used by the inhabitants of Arctic regions. These are very serviceable especially for the reason that there is no glass to collect moisture and obstruct the sight. They have, however, the disadvantage that the field of vision is very considerably reduced, and it is particularly inconvenient not to be able to see the ground at one's feet when one is travelling on 'ski.' But I should fancy that this defect might to

some extent be met by making a vertical slit as well as a horizontal.

Our *tent*, which was kindly procured by Lieutenant Ryder of Copenhagen, was constructed so that it could be taken into five pieces: two sides, two ends, and the floor, all of them of waterproof canvas. My notion had been that we should be able to use all these sections as sails for our sledges, but the ends and sides were of such thin material that I was afraid the wind would tear them to shreds, which, to put it mildly, would have had most unpleasant consequences for us in the cold and snowstorms to which we were exposed. The canvas was otherwise most successful against the rain, wind, and driving snow. But as it is necessary to have a thin material for the purpose of saving weight, I would recommend future expeditions to have their tents sewn in one piece with the floor; the whole would then have the construction of a bag with but one opening, which would serve as the tent-door, as well as two small holes in the floor for the poles, which would be put through them and rammed down into the snow. The strong canvas floor of such a tent can nevertheless be used as a sail, as the thinner pieces can be left to hang down and be gathered together in front. By this means one would avoid the inconvenience of having the fine snow driven in through the laced joins. Our tent

was in this respect so imperfect that we would sometimes wake in the morning and find our sleeping-bags completely buried in snow. The floor-surface of our tent was just large enough to hold the two sleeping-bags when they were placed alongside one another, but in opposite ways. The tent-poles were three in number, two being used as uprights, and the other joining them at the top; they were all of bamboo and proved quite sufficient for the purpose, and the two smaller ones were used as staffs while we were on the move. The guy-ropes were fastened with broad iron crampon-like hooks, which gave a good hold. On the whole the tent stood very well in the snow, though in several storms we were very much afraid that it would go, and I would therefore recommend others to have good storm-guys. We had some, indeed, but one or two of them gave at the point of attachment and were not easy to repair.

The exact weight of the tent, after I had made considerable alterations and reductions, I do not quite remember, though I know that with guys, pegs, and poles it did not altogether exceed eighteen pounds.

The value of a good *cooking apparatus* to the members of a sledge-expedition can scarcely be overrated, for often by its help every drop of drinking-water over and above that which can be melted by the heat of the body must be obtained. The most

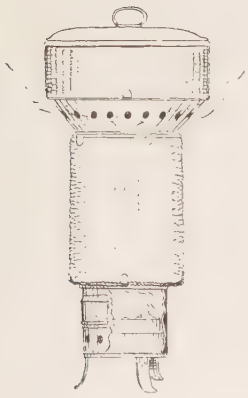
STOVE WHICH USES EITHER GASOLINE OR PARAFFINE SPIRITS.

important qualification is that it shall make the most of the fuel, or, in other words, that it shall render combustion as complete as possible and let none of the heat escape till it has done its work. In this way the weight of one of the most important articles of equipment is reduced to a minimum.

For *fuel* there is, no doubt, nothing at all comparable with alcohol, which should be as pure as possible. In addition to other advantages, such as its cleanliness, it has the great merit of yielding more heat than anything else in comparison to its weight. It has certainly two defects, for in the first place as a liquid it is easily spilt and wasted, though this may be avoided by using the very best of barrels and taps, and by only giving it into careful hands; and in the second place it is drinkable, and at critical times may prove a strong temptation to the best of men. But this, again, may be prevented by adding enough wood-naphtha to make it unpleasant, as we in fact did.

The idea of our cooker was originally taken from that used by the Greely expedition, and after a number of experiments made with the assistance of a friend, I determined finally to adopt the apparatus which is represented by the accompanying drawing. This drawing will, no doubt, make the construction quite intelligible. At the bottom is the heating-

chamber, containing a spirit-lamp with several wicks. The air enters by a number of holes at the bottom in sufficient quantity to ensure complete combustion, and, as it must itself pass through or near the flames, it is either consumed or heated to such an extent that no cold air can enter the apparatus. Should it be necessary, owing to the overheating of the lamp, to let some cold air in, this can be done by holes in the sides of the hot chamber. This, I am sorry to say, we allowed to happen too often. The boiler, which is placed upon the hot chamber, was of copper and tin-lined. It was a tall cylindrical vessel with a copper flue running through the centre, by means of which the heated air is passed from the lower chamber up to the bottom of a broader and shallower copper vessel which was placed over the boiler and used to melt snow in. Thus the air, having delivered a great part of its warmth in the boiler flue and on to the bottom of the snow-melter, eventually escapes through holes in the sides just below the latter.



OUR COOKER

The boiler and the melter were both cased in thick felt, and the latter was also provided with a lid.

With snow at about −20° Fahr., and with the air at

something like the same temperature, it would take an hour or more before I had the boiler full of boiling chocolate and the upper vessel full of water at a temperature a little above the melting point of ice. The quantities would be a little more than a gallon of chocolate and rather less water, while to obtain this result I had to use about ten or eleven ounces of spirit; but careful management was necessary. Experiments made after our return home showed me that our cooker made use of only 52 per cent. of the alcohol consumed. This is, of course, a somewhat extravagant use of fuel, though previous expeditions do not seem to have been much more successful. Yet there is no doubt that further improvements in this direction will lead to a considerable reduction in the consumption of spirit.

By way of making the heat of the body do some of the work of melting snow, each of us had a tin flask of a flat and slightly concave form, which could be carried at the breast without inconvenience.

The *provisions* of a sledge expedition must necessarily consist to a large extent of dried articles of food, as they contain most nourishment in proportion to their weight. Preserved things in tins are no doubt more wholesome and easily digestible, but they are much too heavy and can be made little use of.

I had previously reckoned that we should need

per day rather more than half a pound of dried meat, about the same amount of fatty food, and a little more of dried bread or biscuit, and that with the addition of various things like chocolate, sugar, peptonised meat, pea-soup, and so on, the whole daily ration would reach two pounds and a quarter or a little more.

This amount would no doubt also have proved sufficient if we had only had the proper quantities of each kind of food, but, owing to a misunderstanding, there was a want of fatty stuffs, which caused us a good deal of inconvenience. Herr Beauvais of Copenhagen, who was to provide our pemmican, informed me that he was accustomed to prepare it in the usual way. I had no opportunity of seeing him personally, but, supposing that his pemmican, like the ordinary preparation, would consist of dried meat and fat in equal quantities, or would contain at least a third part of the latter, I ordered the necessary amount of him. As I was passing through Copenhagen just before we started I learned that his pemmican was carefully purified of all fat. This was an unpleasant surprise, but, as we had a certain quantity of butter as well as some liver 'pâté' of a very fatty nature, I thought we should get on well enough. However, it proved a very short supply, and in the end we suffered from a craving for fat which can scarcely be realised by anyone who has not experi-

enced it. In other respects Beauvais' dried meat was excellent.

On the advice of Captain Hovgaard, I tried the same manufacturer's 'leverpostei,' which I may say is not the Strasburg luxury, but a humbler preparation of calf-liver. However, I found it quite unsuited to our needs: in the first place, because it is much too heavy in comparison to its nutritive value; and secondly, because it contains water which freezes and makes it unconscionably hard. On ours we broke several knives, and we had eventually to take to the axe; but then it was necessary to go round afterwards to gather up the fragments, which flew far and wide over the snow.

We found Rousseau's meat-powder chocolate especially useful, as it is both nourishing and palatable. I took 45 lbs. of it, which I ordered of the manufacturer in Paris. The analysis of this chocolate shows that it contains as much as 20 per cent. of meat powder. It certainly had a particular invigorating effect upon us, and if a sufficient amount of fat were taken with it, and it were given in small quantities, it would prove a most excellent food for men while on the move. As compared with pemmican we found it very easy of digestion. This is a quality which has both advantages and disadvantages. If any substance is too easily digested, it is taken into the body at once,

the stomach becomes empty again, and a feeling of hunger ensues. On the other hand, many people will find a substance like pemmican too hard to digest, and in such cases a large amount of nutriment will be passed through without doing its proper work. But easily digestible substances have, on the whole, a greater nutritive value in proportion to their weight than such as are less readily assimilable, and therefore it must be considered that the possession of the former quality in an article of food is a strong recommendation for its use by Arctic travellers.

As bread we used partly the Swedish biscuit known as 'knäkkebröd,' which is very light and has not that dryness of taste which causes a feeling of thirst, and partly meat biscuits. These had to be specially ordered in England, and contained a certain percentage of meat powder as well as flour. They proved palatable as well as nourishing.

For warm drink, which, though no necessity, is undoubtedly a great comfort, we generally used chocolate in the morning and pea-soup in the evening. The chocolate was, of course, not made of the above-mentioned French preparation, but of ordinary chocolate flavoured with vanilla. For pea-soup we used the German 'Erbsenwurst,' which was supplied by A. Schörke & Co. of Görlitz. We also used the similar preparations, 'Bohnenwurst' and 'Linsen-

wurst,' all of which contain bacon and ham as well as the main ingredients : peas, beans, and lentils. I tried something analogous manufactured in London, but it contained no fat, which was the ingredient which made the German preparations so palatable to us.

We also took tea and coffee, the latter in the form of extract, of which we had rather more than a quart. After having tried this two or three times in the afternoon and evening, and found that, though it made us feel better and cheered us up for the time, we got little or no sleep in the night afterwards, I confined its use to a morning every now and then. But, as it did not seem to suit us even at this time of day, it was finally tabooed altogether, till we had almost reached the west coast, much to the consternation and despair of the Lapps. Its effect upon us, Lapps included, was indeed astonishing. This was no doubt due to the empyreumatic oils—caffeone, for instance, the poisonous properties of which are well known. It seems probable that the extract, owing to the peculiar manner of preparation employed, contains these deleterious substances in far greater proportion than coffee made in the ordinary way; while, on the other hand, the quantity of caffeine, the effect of which is sedative, is for the same reason diminished.

Tea as far as I can judge does considerably less harm and is besides a very refreshing drink. We

often used weak tea with condensed milk or a little sugar, especially in the morning, after all our chocolate was gone.

My experience, however, leads me to take a decided stand against the use of stimulants and narcotics of all kinds, from tea and coffee on the one hand, to tobacco and alcoholic drinks on the other. It must be a sound principle at all times that one should live in as natural and simple a way as possible, and especially must this be the case when the life is a life of severe exertion in an extremely cold climate. The idea that one gains by stimulating body and mind by artificial means betrays in my opinion not only ignorance of the simplest physiological laws, but also a want of experience, or perhaps a want of capacity to learn from experience by observation. It seems indeed quite simple and obvious that one can get nothing in this life without paying for it in one way or another, and that artificial stimulants, even if they had not the directly injurious effect which they undoubtedly have, can produce nothing but a temporary excitement followed by a corresponding reaction. Stimulants of this kind, with the exception of chocolate, which is mild in its effect and at the same time nourishing, bring practically no nutritive substance into the body, and the energy which one obtains in anticipation by their use at one moment

must be paid for by a corresponding exhaustion at the next. It may no doubt be advanced that there are occasions when a momentary supply of energy is necessary, but to this I would answer that I cannot imagine such a state of things arising in the course of a protracted sledge-expedition, when, on the contrary, as regular and steady work as possible is generally the main thing to be aimed at.

To many all this will no doubt appear so plain and obvious that it is scarcely necessary for me to touch upon the subject. But at the same time it must be remembered that even in recent years Arctic expeditions have set out from home with large supplies not only of tobacco, but of such fatal stimulants as alcoholic drinks. For the most characteristic example of this tendency one need only turn to the list of drinkables taken by the second German Polar Expedition on the two ships 'Germania' and 'Hansa.' It is sad, indeed, when a wrong principle of this kind leads to such terrible consequences as it did in the Greely Expedition, the last great tragedy in the history of Arctic exploration. When one reads, for instance, how the plucky Sergeant Rice, famished, frozen, and tired to death, imagines he can save himself by a dose of rum, to which he has even added ammonia, the very worst thing he could have hit upon, and then dies shortly afterwards in the arms of

his friend Frederick, who is meanwhile stripping himself of his own clothes, down to his very shirt, in his attempts to thaw his comrade's stiffening limbs, one cannot but be moved to the very heart at the thought of so much energy, courage, and noble self-sacrifice being thus uselessly thrown away. The melancholy debauches which the men on this expedition were guilty of when driven to excess by their inhospitable surroundings, and the continual imminence of death and destruction, I will not touch upon. Besides reducing the power of endurance and exercising a directly injurious influence by lowering the temperature of the body and weakening the activity of the digestive organs, alcohol also destroys energy and lessens the spirit of enterprise, and this not least when men, like those under Greely, are perishing of starvation and exhaustion.

But what is to be said when an experienced Arctic traveller like Julius Payer writes in his book on the Austrian and Hungarian Polar Expedition of 1872–1874, that 'a small daily allowance of rum is almost indispensable on a sledge-expedition of any length, especially when the temperature is extremely low'? As if it were not just in low temperatures that spirits are most injurious, and as if it were not known that they cause a reduction of bodily heat instead of an increase of it, as many people are inclined to

think, because such things 'warm them up,' as they say, and because they feel warm and comfortable after a good dinner supplemented by plenty of strong wines.

It is often supposed that, even though spirits are not intended for daily use, they ought to be taken upon an expedition for medicinal purposes. I would readily acknowledge this if anyone could show me a single case in which such a remedy is necessary; but till this is done I shall maintain that this pretext is not sufficient, and that the best course is to banish alcoholic drinks from the list of necessaries for an Arctic expedition.

Though tobacco is less destructive than alcohol, still, whether it is smoked or chewed, it has an extremely harmful effect upon men who are engaged in severe physical exertion, and not least so when the supply of food is not abundant. Tobacco has not only an injurious influence upon the digestion, but it lessens the strength of the body, and reduces nervous power, capacity for endurance, and tenacity of purpose. With regard to the complete prohibition of tobacco in Arctic work, there is one circumstance to be borne in mind which has not to be considered in connexion with spirits, as habitual hard drinkers are scarcely likely to take part in these expeditions: the circumstance that most men are so

accustomed to its use that they will keenly feel the want of it. For this reason it would probably be advisable not to make the change too sudden, but to limit the use by degrees, and at the same time, perhaps, not to take excessive smokers and chewers of tobacco upon such expeditions at all.

Among us, four were smokers, Ravna and I being the exceptions, but our supply of tobacco was but small. During the crossing only one pipe was allowed on Sundays and other specially solemn occasions.

Our other provisions, over and above those which I have already mentioned, consisted of butter, some 'rækling,' or dried strips of halibut, which is of a very fat nature, Gruyère cheese, the Norwegian 'mysost,'[1] two boxes of oatmeal biscuits, some 'tytte-

[1] These three peculiar Scandinavian products deserve a word of special mention. 'Mysost,' literally 'whey-cheese,' is a substance bearing a strong resemblance in colour and consistency to a buff or brown soap, and is a familiar object to all travellers in Norway. By protracted boiling the whey of cow's, or preferably goat's milk is gradually reduced to a thick porridge-like mass, which is finally dried and compressed in oblong moulds. The cheese, which really consists of sugar-of-milk together with a certain amount of fatty matter and a few salts, is therefore scarcely a true cheese, as the curd element is almost if not entirely wanting. The 'tyttebær' (*Vaccinium vitis idæa*) is the commonest and most valuable of Scandinavian wild fruits. Though the berries are exported to England from Norway and Sweden and there sold as cranberries, apparently for want of a familiar English specific name, or possibly from sheer ignorance on the part of buyer and seller alike, they are very different from the fruit of the true cranberry (*Oxycoccos palustris*), which has a very distinct habit and

bær' or red whortleberry jam, some dried 'karvekaal' or caraway shoots, some peptonised meat, eight pounds of sugar, a few tins of condensed milk, and a few other things, all in small quantities.

We were also presented by the Stavanger Preserving Company with some tins of provisions, which we much enjoyed while we were drifting in the ice, and afterwards while we were working our way in the boats up the coast again. This extra supply we had to some extent to thank for the fact that our provisions, which were calculated to last for two months, actually held out for two months and a half, that is to say, from the time we left the 'Jason' till Sverdrup and I reached Godthaab. Indeed, we really had a good deal left at the end, especially of dried meat, and some of us used these remnants long after we had reached our winter-quarters. Of the dried meat which had passed the 'Inland ice' there was even some left at Christmas.

In connexion with the provision supply I may also mention our two double-barrelled guns with their ammunition. Each of them had a barrel for ball of about ·300 calibre, and a shot barrel of 20-bore.

place of growth, and in Norway at least is comparatively uncommon. —*Karvekaal* is the popular name for the young shoots of the caraway plant (*Carum Carui*), which is found wild in great abundance in many parts of Norway, and is held in considerable estimation as a spring vegetable.

The small calibre of these barrels allowed of a considerable reduction in the weight of the ammunition, and I found the guns perfectly satisfactory, whether for seal or sea-birds. They would have been quite sufficient for bear also in the hands of a good shot, for here as at other times the most important factor is the man behind the sights. Our guns were intended as well to procure us food on the east coast, especially if it had been necessary to pass the winter there—and with this in view I had thought of leaving a cache of ammunition with one gun on the eastern side—as to give us a supply of fresh meat on the west coast if we did not find people at once. For, given the sea-coast, a gun, and something to put in it, there need never be a lack of food.

The *scientific instruments* of the expedition consisted first of a theodolite, an excellent instrument by a Christiania maker. It was certainly heavy, about 7 lbs. in itself, and had a stand which weighed little less, but, on the other hand, it proved exceedingly trustworthy for both terrestrial and astronomical observations. In future I should prefer to have the theodolite, as well as other instruments, made of aluminium, which would save much in weight.

The sextant was a nice little pocket instrument by Perken, Son, and Rayment, of London, which did excellent service. For the artificial horizon we used

mercury, which never froze at mid-day. The great weight of mercury leads me to think that oil, for instance, would be more serviceable for this purpose.

The rest included an azimuth dial with three compasses, for the testing of magnetic deviation as well as for trigonometrical observations; five pocket-compasses; three aneroid barometers from the above-mentioned English makers; and a hypsometer or boiling-point barometer, with the necessary thermometers.

The principle of this last barometer depends upon the accurate determination of the boiling-point of pure water, which, as is well known, varies with the atmospheric pressure, and therefore, of course, with the altitude. I found this a particularly convenient form of barometer, and its inconsiderable weight makes it especially suitable for an expedition like ours, whereas a mercurial instrument would be much too heavy and difficult to transport.

Our thermometers consisted of six special instruments intended to be tied to strings and whirled rapidly round in the air. The bulb is thus brought into contact with so many particles of air that the effect of the sun's rays upon it may be almost disregarded, and the temperature of the air can thus easily be taken in the full sunshine.

If the bulb of one of these sling-thermometers be

covered with a piece of some thin stuff like gauze and then wetted, one can readily find the degree of moisture present in the air by comparison with a dry-bulb instrument.

We had, besides the above, a minimum and an ordinary alcohol thermometer, both presented us by a Christiania maker.

Our time-keepers were four ordinary watches of the half-chronometer movement. The usual chronometer-watches are scarcely suitable for such work, as in certain positions they are liable to stop. We were in fact exceedingly unlucky with our watches, as one of them, owing to a fall, stopped entirely, another for the same reason apparently became somewhat inaccurate, and a third, an old watch of my own, came to a stand-still, probably for want of cleaning. The fourth, however, stood the whole journey well and proved an excellent time-keeper.

I consider that the expedition was particularly well equipped in the way of instruments, and this was to a large extent due to Professor H. Mohn, the Director of the Meteorological Institute at Christiania, who gave the most unremitting attention to the question of our scientific outfit.

At the request of Professor Pettersson, of Stockholm, I took on his behalf the necessary apparatus for obtaining samples of air during our journey.

This consisted chiefly of a number of moderate-sized glass cylinders carefully exhausted of air and hermetically sealed. On being opened they were of course at once filled, and the vessels were so arranged that they could be easily sealed again by the help of a spirit-lamp and a blow-pipe. The air obtained could thus be transported any distance in its original condition.

A necessary addition to the outfit of a modern exploring party is, of course, a photographic apparatus. I took a little camera to use with the theodolite stand, two roll-holders for Eastman's American stripping films, and ten rolls of twenty-four exposures each. The camera alone weighed two-and-a-quarter pounds. I made about 150 exposures, and on the whole was well satisfied with the apparatus and the results. Glass plates would, of course, have been much too heavy and inconvenient. I also had two red lamps, one of glass and the other of paper, for changing the rolls, and a few stearine candles to use in them.

Our remaining instruments, tools, and other things included two pairs of aluminium glasses and a couple of pedometers; an axe, with various smaller implements, such as knives, files, awls, pincers, screwdriver, small screws for the steel plates under the sledge-runners, a sailmaker's palm, sewing materials, and so

on; scales for weighing out the rations; Tyrolese crampons or 'steigeisen,' ice-nails for our boots, Manilla-rope for the crevasses, as well as other cords for the sledges and various purposes; ice-axes with bamboo-shafts, which were also used as 'ski'-staffs; a spade for the snow, to screw on to one of these shafts; several bamboos for masts and steering purposes while our sledges and boats were under sail, and block-tackle for hoisting the boats and sledges when necessary; drawing materials, sketch- and note-books; a table of logarithms; nautical almanacs for 1888 and 1889; burning-glass, flint and steel, and matches, which latter were partly packed in air-tight tin boxes, and kept here and there among the baggage in order that, if we lost some, we should still have enough left; three cans of methylated spirit holding rather more than two gallons apiece; tarpaulins, some of water-proof canvas, and others of oil-cloth, to cover the sledges; six bags intended for making portages over difficult ground, but really used as portmanteaus for each member's private effects; long boat-hooks of bamboo, as well as short ones, which could also be used as paddles and proved exceedingly serviceable in narrow water-ways; oars, reserve swivel-rowlocks, and a hand-pump and hose to bale the boats with when they were loaded. Finally, we had a little medicine-chest containing splints and bandages for broken

limbs, chloroform, cocaine in solution for the alleviation of pain from snow-blindness, toothache drops, pills, vaseline, and a few other things, all of course reduced to a minimum of weight.

Finally, I may say that four of our sledges when fully loaded averaged some 200 pounds, while the fifth amounted to nearly double as much.

In April we made a little experimental trip up into the woods near Christiania, all the members of the party except one being present. Balto's description of the excursion is worth reproducing :—

'One afternoon we went out of the town up into the woods to spend the night there, and try the reindeer-skin sleeping bags. In the evening, when we had reached the wood where we were to pass the night, we put up our tent. Then it was said that we were going to make coffee in a machine to be heated by spirit. So the pot of this machine was filled with snow, and we lighted the lamp beneath. It went on burning for several hours, but never managed to produce a boil. So we had to try and drink the lukewarm water with coffee extract added to it. It did not taste of anything whatever, for it was almost cold. At night when it was time to sleep, the four Norwegians crawled into the bags, and Nansen offered us places there too, but we were afraid it would be

too hot. We did not want bags to sleep in, we thought, and so we lay down outside. In the morning I woke about six and saw our men sleeping like bears in their sacks. So I lay down again and slept till nine, when I woke the others, for I knew that a horse had been ordered to take us back at ten.'

This description shows plainly enough that certain parts of our outfit, as our cooking-machine, for instance, were not so satisfactory as they might have been, but there was plenty of time left for improvements. We gave our best attention to the matter, and when we actually started at the beginning of May, after having procured several important things at the eleventh hour, we had nearly everything in the desired state of efficiency, and plenty of time during our voyage to finish all that was not yet ready.

CHAPTER III

'SKI' AND 'SKILÖBNING'

THE expedition I am about to describe owed its origin entirely to the Norwegian sport of 'skilöbning.'[1] I have myself been accustomed to the use of 'ski' since I was four years old, every one of my companions was an experienced 'skilöber,' and all our prospects of success were based upon the superiority of 'ski' in comparison with all other means of locomotion when large tracts of snow have to be traversed. I therefore think that I cannot do better than set apart a chapter for the description of 'ski' and the manner of their use, since so little is known about the sport outside the few countries where it is practised as such, and since a certain amount of familiarity with it and its technical terms will be necessary to the full comprehension of some part of the narrative which follows.

It is, of course, not unnatural that those who have never seen the performance should be surprised to learn that a man can by the help of two pieces of

[1] See note to page 3.

wood, shaped for the purpose, progress as rapidly over the surface of the snow as he really does. This point is quaintly touched upon by the author of the old Norse treatise 'Kongespeilet,'[1] who in discussing the question of the existence of flying dragons tamed to the service of man, away in the Indies, observes that, though this may seem strange indeed to his countrymen, there are corresponding marvels to be found among them which may seem even more astonishing to the folk of other lands; and he goes on to say:—

'But even more marvellous will it seem to them when they hear of men who can tame to their service pieces of wood or thin boards in such a way that a man who is no speedier of foot than his fellows when he has shoes on his feet, or indeed is without shoes, can, nevertheless, as soon as he has bound beneath his feet boards six or eight feet in length, outstrip the birds in flight, or the swiftest hounds, or even the reindeer, which is itself twice as swift as the hart.

[1] *Kongespeilet* is the modern Norwegian name for the 'Konungs Skuggsiá' or 'King's Mirror,' a didactic treatise by an unknown author hailing from Helgeland in Northern Norway, the date of which is now generally referred to the thirteenth century. One of the two sections of the treatise which were completed is concerned with 'Court Manners,' while the other, ostensibly taking for its subject the less appropriate theme of 'Chapmen,' also contains a most interesting and valuable digression on the physical history of Iceland, Greenland, etc., as well as an account of divers northern phenomena.

For there are many men who are so swift upon their "ski" that they can strike down with the spear nine reindeer as they speed by in their course, and thereafter even more. This, indeed, is a thing which will seem marvellous, nay incredible and absurd, in all those lands where folk know not the art and cunning whereby boards can be trained to this great speed; who know not that on the mountains there is nothing among things which run upon the face of the earth which can outstrip or escape the pursuit of that man who has boards beneath his feet, even though he be left no whit swifter than other men as soon as he has taken the boards from off his feet. But in other lands, where folk know not this art, no man will be found so swift but that he will lose all his swiftness as soon as these boards are bound to his feet. But we do know these things for a certainty, and as soon as snow comes to us in the winter season we have oftentimes occasion to see men who are skilled in this art.'

'Ski,' then, as will have been already gathered, are long narrow strips of wood, those used in Norway being from three to four inches in breadth, eight feet more or less in length, one inch in thickness at the centre under the foot, and bevelling off to about a quarter of an inch at either end. In front they are curved upwards and pointed, and they are sometimes

a little turned up at the back end too. The sides are more or less parallel, though the best forms have their greatest width in front, just where the upward curve begins, but otherwise they are quite straight and flat, and the under surface is made as smooth as possible. The attachment consists of a loop for the toe, made of leather or some other substance, and fixed at about the centre of the 'ski,' and a band which passes from this round behind the heel of the shoe. The principle of this fastening is to make the 'ski' and foot as rigid as possible for steering purposes, while the heel is allowed to rise freely from the 'ski' at all times.

On flat ground the 'ski' are driven forward by a peculiar stride, which in its elementary form is not difficult of acquirement, though it is capable of immense development. They are not lifted, and the tendency which the beginner feels to tramp away with them as if he were on mud-boards in the middle of a marsh must be strenuously resisted. Lifting causes the snow to stick to them, so they must be pushed forwards over its surface by alternate strokes from the hips and thighs, the way being maintained between the strokes by a proper management of the body. The 'ski' are kept strictly parallel meanwhile, and as close together as possible, there being no resemblance whatever, as is sometimes supposed, to

the motion employed in skating. In the hand most 'skilöbers' carry a short staff, which is used partly

ON LEVEL GROUND
(From a photograph)

to correct deficiencies of balance, but by the more skilful chiefly to increase the length of the stride by propulsion. In many country districts this pole often reaches a preposterous length, and in some parts, too, a couple of short staffs are used, one in each hand, by the help of which, on comparatively flat ground, great speed can be obtained. When the snow is in thoroughly good condition the rate of progress is quite surprising, considering the small amount of effort expended, and as much as eight or nine miles can be done within the hour, while a speed of seven miles an hour can be maintained for a very considerable length of time.

Uphill the pace is of course very much slower, though here also the practised 'skilöber' has great advantages over all others. Here the 'ski' must be lifted slightly, as the snow sticking to them counteracts the tendency to slip backwards. If the gradient be steep, various devices may be employed, the most effectual and characteristic being that shown in the annexed illustration. The 'ski' are turned outwards at as wide an angle as the steepness of the slope renders advisable, and are advanced alternately one in front of the other, the track left in the snow exactly resembling the feather-stitch of needlewomen. This method requires some practice, and cannot be employed if the 'ski' are above a certain length, as

the heels will then necessarily overlap. By its means a slope of any gradient on which the snow will lie may be ascended quickly and easily, but the position

UP- AND DOWN-HILL
(*By E. Nielsen, after a photograph*)

is somewhat too strained to be maintained for long. Another and easier, though much slower way, is to mount the hill sideways, bringing the 'ski' almost, if not quite, to a right angle with the slope, and

working up step by step. Or again, especially on the open mountain, the 'skilöber' will work his way upwards by tacking from side to side and following a zigzag course, taking instinctively the most advantageous line of ascent. In any case, if he be up to his work he will cover the ground quickly and without undue exertion, and, as a matter of fact, as Olaus Magnus wrote in 1555, 'there is no mountain so high but that by cunning devices he is able to attain unto the summit thereof.'

Downhill, the 'ski' slide readily and are left to themselves, the one thing necessary being to maintain the balance and steer clear of trees, rocks, and precipices. The steeper the slope the greater the speed, and if the snow be good the friction is so slight that the pace often approaches within a measurable distance of that of a falling body. The author of 'Kongespeilet,' above quoted, was speaking not altogether at random when he described the 'skilöber' as outstripping the birds in flight, and declared that nothing which runs upon the earth can escape his pursuit.

The snow is not by any means always in a good condition for 'skilöbning,' and its moods are very variable and capricious. Wet snow due to a mild temperature is particularly unfavourable as it sticks fast to the under surface of the 'ski,' especially if

they are not covered with skin, and will often accumulate into a mass ten inches or a foot thick, the weight of which makes progress terribly laborious or well-nigh impossible. This is a fate which has befallen many an unlucky 'skilöber' when he has been out on the open mountain, or more especially in the deep loose snow of the forest, and a sudden rise of temperature has surprised him when many miles distant from a habitation.

Nor do the 'ski' move readily on newly fallen snow the temperature of which is not sufficiently low, though even when it falls in extreme cold it has a tendency to stick. The same is the case with snow raised from the ground and driven by the wind. The particles are then as fine as dust, and as they pack into drifts they form a peculiar cloth-like surface on which ordinary wooden 'ski' will scarcely move at all. This is worst of all when the snow has originally fallen at a low temperature, as the particles are then extremely fine in the first instance, before the wind has had any effect on them. This was the kind of snow we had to deal with during nearly the whole of our crossing of the 'Inland ice,' and the reason why our progress was so very slow and wearisome.

But besides being slippery the surface must also be tolerably firm, or the 'ski' will sink too deep.

Snow that has fallen during a thaw, has had time to sink and pack well together and has then been exposed to frost, is in excellent condition for the purposes of the 'skilöber.' Things are even more favourable when a frost succeeding a rapid thaw has turned the surface into a hard, icy crust, and if this is subsequently covered with an inch or so of newly-fallen snow, or preferably hoar-frost, the going reaches the pure ideal, and the pace which may then be obtained without effort is simply astonishing. If this crust lie, as it often does, bare of loose snow or rime, the 'ski' slide fast enough, but have no proper hold on the surface, and the pace on rough and difficult ground may very soon become uncontrollable and dangerous.

Of all the sports of Norway, 'skilöbning' is the most national and characteristic, and I cannot think that I go too far when I claim for it, as practised in our country, a position in the very first rank of the sports of the world. I know no form of sport which so evenly develops the muscles, which renders the body so strong and elastic, which teaches so well the qualities of dexterity and resource, which in an equal degree calls for decision and resolution, and which gives the same vigour and exhilaration to mind and body alike. Where can one find a healthier and purer delight than when on a brilliant winter day one binds one's 'ski' to one's feet and takes one's

way out into the forest? Can there be anything more beautiful than the northern winter landscape,

A STEEP DESCENT IN THE FOREST
(From a drawing by A. Bloch)

when the snow lies foot-deep, spread as a soft white mantle over field and wood and hill? Where will

one find more freedom and excitement than when one glides swiftly down the hillside through the trees, one's cheek brushed by the sharp cold air and frosted pine branches, and one's eye, brain, and muscles alert and prepared to meet every unknown obstacle and danger which the next instant may throw in one's path? Civilisation is, as it were, washed clean from the mind and left far behind with the city atmosphere and city life; one's whole being is, so to say, wrapped in one's 'ski' and the surrounding nature. There is something in the whole which develops soul and not body alone, and the sport is perhaps of far greater national importance than is generally supposed.

Nor can there be many lands so well fitted as ours for the practice of 'skilöbning,' and its full development as a sport. The chief requisites are hills and snow, and of these we have indeed an abundance. From our childhood onwards we are accustomed to use our 'ski,' and in many a mountain valley boys, and girls too for that matter, are by their very surroundings forced to take to their 'ski' almost as soon as they can walk. The whole long winter through, from early autumn to late spring, the snow lies soft and deep outside the cottage door. In such valleys, and this was especially the case in former times, there are few roads or ways of any kind, and

all, men and women alike, whom business or pleasure takes abroad, must travel on their 'ski.' Children no more than three or four years old may often be seen striving with the first difficulties, and from this age onwards the peasant boys in many parts keep themselves in constant practice. Their homes lie, as a rule, on the steep slope of the valley-side, and hills of all grades are ready to hand. To school, which is generally held in the winter season, they must go on their 'ski,' and on their 'ski' they all spend the few minutes of rest between the hours of work, their teacher often joining them and leading the string. Then, too, on Sunday afternoons comes the weekly festival, when all the youths of the parish, boys and young men alike, meet on the hillside to outdo one another in fair rivalry, and enjoy their sport to the full as long as the brief daylight lasts. At such times the girls are present as spectators, notwithstanding that they too know well how to use their 'ski,' and that many a good feat has been done ere now by Norwegian lasses and gone unrecorded.

Such is the winter life of the young in many of our mountain valleys. The boy has scarcely reached the age of breeches before he knows the points of a pair of 'ski': what a good bit of wood should look like, and how to twist a withy to make himself the fastenings. Thus he learns early to stand on his own

legs and his own 'ski,' to rely upon himself in difficulty, and grows up to be a man like his father before him. May our sport long be held in honour, may its interests be cared for and advanced as long as there remain men and women in the Norwegian valleys!

THE MODERN 'SKADE' OR 'SKI'-GODDESS

(By A. Bloch, after a photograph)

But it is especially for the winter pursuit of game that 'ski' are an absolute necessity in Norway as well as the North of Europe generally and Siberia, and it is in this way that most of the clever 'skilöbers' of country districts have been formed.

In earlier times it was a common practice in Scandinavia to hunt the larger animals, such as the elk and reindeer, during the winter upon 'ski.' When the snow was deep the skilful 'skilöber' had no great difficulty in pursuing and killing these animals, as their movements, as compared with his, were naturally much hampered. It was an exciting sport, however, and often required considerable strength and endurance on the part of the hunter, as well as a thorough familiarity with the use of 'ski.' Now, however, these animals are protected during the winter, and all pursuit of them is illegal, though doubtless there is still a good deal of poaching done in this way, especially in the case of elk, in the remoter forests of Sweden and Norway.

Nowadays the Norwegian peasant has most use for his 'ski' in the less exciting pursuit of the ptarmigan and willow-grouse, large numbers of which are shot and snared upon the mountains. The snaring in some districts is especially remunerative, and is often the only channel through which the poor cottagers can attain to the rare luxury of a little ready money. The hare is also sometimes thus hunted and shot, the bear turned out of his lair or intercepted before he has finally taken to his winter quarters, and an occasional lynx or glutton pursued. It is, of course, on 'ski' too that the

nomad Lapps follow and destroy their inveterate enemy, the wolf.

The Siberian tribes again do all their winter hunting upon 'ski,' and as with them the winter is the longest season of the year, the great importance, if not absolute necessity, of 'ski' to the arctic and sub-arctic peoples will readily be seen.

'Skilöbning' is an old sport in Norway—how old it is impossible to say, for history fails to take us to its origin. The legends connected with the settlement of our land tell us that our ancestor Nor and his followers waited in Finland till the snow came and they could use their 'ski,' and then they passed into the country by the northern way, or round the Gulf of Bothnia. These legends are, however, of comparatively late date, and their evidence is therefore of not much account. But the whole of the old Norse literature, the mythological, biographical, and historical Sagas alike, abound with references to 'ski' and their use. From the purport of many of these references there seems to be little doubt that our people originally learned the use of 'ski' from their neighbours the Lapps, and that 'skilöbning' was generally practised in the northern parts of Norway at least as early as in the tenth century. The poems of this date show, too, that in our old mythology the sport had its representatives and

patrons: Skade among the goddesses, and Ull among the gods.

In later history 'ski' are perhaps not quite so prominent, though for military purposes they have been in continual use from the adventurous days of King Sverre down to the latest of the border struggles with Sweden, while in the middle of last century special companies of 'skilöbers' were organised and kept in admirable training.

The distribution of the sport in Norway at the present day is in the eastern and inland districts almost universal, while the want of snow, unsuitability of the ground, and changeable climate of the west coast have naturally proved very unfavourable to its development in those parts. In Sweden, again, the general flatness of the country has discouraged the growth of the sport, and it is only in the northern provinces, and more especially among the Mountain Lapps, that it is now much practised. In Finland the sport is no doubt of earlier date than in Scandinavia, and 'ski' are also much used by the Finnish population of to-day, while in Russia there is also a certain amount of 'skilöbning,' especially among those sections of the population which are of Finnish origin or connexion. Going further east, we find that 'ski' are used over the whole of Northern Asia as far as Behring's Straits. In earlier days the sport was

introduced by the Norwegians into Iceland and Greenland, and in modern times they have carried it with them to America, where it is cultivated in various parts, competitions even being now held in the States of Wisconsin and Minnesota.[1]

Though literature and history do not carry us far back in a search for the home and origin of 'ski,' the science of comparative philology furnishes considerably more evidence.

In this connexion my friend Herr Andreas Hansen, of the University Library of Christiania, has been good enough to make at my instance some investigations into the various names by which 'ski' are known among the numerous tribes of Northern Asia. His researches have produced results which, if not decisive, are extremely interesting and suggestive.

The subject is of far too special a nature and too complicated to be adequately treated here, but a short summary will be enough for my purpose. At the same time I refer the reader to the accompanying

[1] In 'Den Norske Turistforenings Årbog' for 1889 I see that Mr. A. G. Guillemard, in an article on the great waterfalls of the world, states that on the Australian continent 'snow is unknown except on Mount Kosciusco and the neighbouring uplands and summits of the Southern Australian Alps in mid-winter, when snow-shoes very similar in pattern to the Norwegian "ski" are almost universally used by the peasants of the mountainous district round Kiandra.' In want of positive evidence on the point I feel tolerably certain that these snow-shoes must be a modern introduction by Scandinavian settlers.

chart, upon which the names of the tribes are given together with the words used by them respectively for 'ski.' I may also add for the benefit of the uninitiated that lines have been drawn to show roughly the routes by which the different peoples and tribes are supposed to have arrived at their present habitations.

It seems that all the names of 'ski,' with a few exceptions, can be gathered into a small number of typical groups or classes, which show no obvious connexion with each other. The single members of these groups occur promiscuously with greater or less frequency and at longer or shorter intervals throughout the whole of Northern Asia and North-Eastern Europe, the same word in one particular instance finding its extreme limits in the North of Norway on one side and in East Siberia on the other.

The most important of these groups are three, viz:—

1. *Sok* and *suk*, with their apparent analogues *tokh*, *hok*, and *kok*. With *sok* and *suk* we may also closely connect *soks* and *suks*, as well as *suksi* (*suhsi*), *sivakka* and *savek*.

This type of word has the widest distribution of all, as we can follow it from the Seas of Japan and Okhotsk, where among the Goldes, and the Manikow, and Kondogiri-Tunguses it occurs in the compounds

suk-sylta, *sok-solta*, *suk-sildæ*, and *huk-sille*, right across to the Baltic Sea where it appears in the Finnish *suks*, *suksi*, &c. The type is found almost entirely among the Tunguses and Finno-Ugrian peoples as well as with the two Samoiede tribes: Sojotes, who have *kok*, and the Karagasses, who have *hok*.

The occurrence of the same word in tracts so widely distant is not difficult of explanation if the generally accepted view be adopted of the common origin of these peoples in the region about Lake Baikal and the Altai Mountains. Here 'ski' must have been known at the time when they lived as neighbours, and hence they must have carried them to the remote regions which they now inhabit. The distance which now separates these peoples precludes the possibility of a direct transmission of the word by simple borrowing.

2. *Sana*, *taña*, *hana*. This type is found among the Burjats, a tribe reckoned to the true Mongols, and with certain Samoiedes by the River Yenisei in North-Eastern Siberia. Here again distance renders it impossible that any direct borrowing could have taken place. But as it is supposed that these Samoiede tribes have also migrated from the Baikal region, where the Burjats are to be found at this very day, we are at once led to the same explanation of the phenomenon as before.

3. A third group contains the elements *solta*, *sylta*, *sildæ*, *sille*, which are found in the compound words of the Goldes and Tunguses: *sok-solta*, *suk-sildæ*, &c., and to these may be added the analogous *toldö*, *tolde*, and *tolds* of the Samoiedes. Here again an immense distance separates the localities, and we must have recourse to the same explanation of a common starting-place.

These three groups of words, therefore, and the geographical distribution of their members, lead us to regard the Baikal and Altai region as the probable home of 'ski,' and to ascribe their origin to a period of the remotest antiquity, when the five main branches of the Mongolian race still lived in mutual proximity.

As will be seen from the map, there are still a number of words which can scarcely be brought into analogy with those which have been dealt with hitherto. These words, however, occur as a rule among tribes which seem linguistically isolated, and of whose movements and affinities little or nothing is as yet known.

Lastly, among words of more modern origin and spontaneous occurrence may be reckoned the Norwegian *ski* and *aander* (i.e. short skin-covered 'ski') with the Swedish analogues *skida* and *andor*, the Russian *lysha*, *golysha*, the Polish *łyżwa*, and the Lettish *lushes*; all of which are clearly of Aryan parentage.

From the Russian *golysha*, which means 'bare ski,' i.e. 'not covered with skin,' evidently comes the Lappish *golas*, and thence by regular modification the Finnish *kalhu*, which derivatives suggest that the Lapps and Finns have learned to use bare 'ski' from the Russians. Among the Finns also occurs *lyly*, which like *kalhu* is used of the bare wooden 'ski' of the left foot, and means originally 'a kind of pine-wood,' as well as *patasma*, which besides *sivakka* is applied to the skin-covered right 'ski,' and signifies 'that with which one kicks.'

We Norwegians have hitherto been somewhat inclined to consider our own country as the cradle and home of our dear sport 'skilöbning,' but a more scientific examination of the question, which seems hitherto never to have been attempted, forces us to allow the unwelcome fact that we must be among the youngest of the numerous tribes who have adopted the sport, and that we lie on the very outskirts of the huge tract of country throughout which the use of our familiar 'ski' seems all but universal.

Another interesting question, which I will also briefly refer to, is the history and gradual evolution of the 'ski' form. The necessity of making progress through deep, loose snow has led the inventive faculty of man to produce various implements more or less adapted to the purpose. These we find in the most

primitive form in different mountain tracts which lie really outside the true 'ski' region. Thus in Armenia, according to Xenophon, the natives used to bind sacks round their horses' feet to prevent them from sinking to the girths in the snow. This was one crude device. Strabo, again, tells us that the mountaineers of the Southern Caucasus used on their feet frames covered, like tambourines, with hide, and furnished below with spikes; while the Armenians are also described as employing discs of wood with spikes beneath them for the same purpose. Again, according to Suidas, Arrian records the use of frame-works of wicker on each foot among the natives of a certain mountainous region, the name of which we are not told.

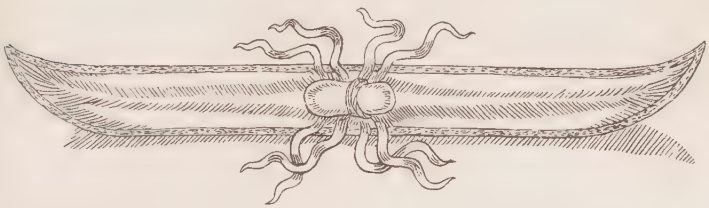
These classical allusions give us a hint as to the origin of 'ski.' The object being to invent something which would prevent the feet from sinking into the snow, the simplest device which would effect this would naturally be a disc of wood. If this were of any size it would much impede progress, and a very obvious expedient would be to make the wooden plate oblong. From this point there might well be a divergence. Either the plate of wood might be abandoned altogether in favour of a wicker frame-work, such as that referred to by Arrian, and that which still survives in Norway in the form of 'truger,'

which I described in my last chapter, and this again might well be the primitive device out of which the elegant form and elaborate workmanship of the Indian snowshoe has been developed; or, another direction being taken, the plates of wood may have been covered with hide to make them stronger. The fact that spikes were used underneath some of these contrivances shows that there was no idea of sliding in the first instance. But if the hide were employed with the hair on, and the spikes were for one reason or another omitted, the advantage of acquiring a sliding motion on the flat and down gentle slopes would no doubt soon be discovered. This is an important step for our purpose, for as soon as it was found that these more or less clumsy wooden plates could be made to glide upon the snow with advantage the development of the true 'ski' had begun. Moreover, as far as we can learn, the 'ski' now in use in the remote parts of Northern Asia are exceedingly short and broad, and it is plain that, as far as shape goes, the transition from oblong plates of wood to these primitive short 'ski' would be soon effected.

It would thus appear that one of the earliest forms of 'ski' was covered with skin, and this form is not only still universal over far the greater part of Asia, but it was probably the one in common use among the Lapps and in the north of Norway down

to historical times. In our country it has almost though not quite disappeared, and in this connexion I may mention incidentally that a curious transitional form is still in use in Österdalen, one of the eastern valleys of Southern Norway, and the neighbouring Swedish districts, one 'ski' being long and of plain wood, and the other short and often covered with skin.

Our last speculation thus furnishes us with a plausible theory that the original wooden plate has



THE EARLIEST DRAWING OF A NORWEGIAN 'SKI,' FROM THE YEAR 1644

differentiated into two forms, one reaching its highest development in the wooden frame strung with a network of sinews, which constitutes the Indian snow-shoe, and the other its culmination in the modern sporting 'ski' of Norway. It is exceedingly remarkable that there is no trace of the true 'ski' to be found on the American continent, the only signs of connexion being the narrow oblong snowshoe of Alaska and the neighbouring regions, and the very noteworthy fact that the Indians have in certain parts discovered

that skin stretched beneath their snowshoes gives them the great advantage of being able to slide downhill.

The whole subject requires, of course, far fuller and more systematic treatment than I have been able to give it here. It is strange that this has not been done hitherto, but such is the case, notwithstanding the really important part which 'ski' and their kindred have evidently played in the history of the civilisation of a very considerable portion of the northern hemisphere. Here they obviously form one of the most important means of communication, and make the winter, when the snow, as it were, lays bridges between one people and another, the principal season of movement and intercourse.

The various forms of 'ski' in use in Norway at the present time are very numerous. Some are long and narrow, some are short and broad; some are hollowed out underneath into one great groove, while some have one, two, or three much smaller grooves, and others have no groove at all. The object of these grooves is to make the 'ski' run steadier, as on beaten roads and hard snow there is otherwise likely to be a good deal of lateral movement. As I have already said, in a few districts in Nordland, and there only as far as I can learn, are 'ski' covered beneath with skin still in use. These

skin-clad 'ski' have one advantage, that they glide better when the snow is sticky, and thus may often be used when wooden 'ski' are out of the question. And again, as the skin with which they are covered has the hair pointing backwards, they do not slip back so readily when a hill is being mounted; but this is a quality of which the skilful 'skilöber' has little need.

I do not think that any more detailed description of all these various forms would be in place here, but it is a reproach to us that no such description as yet exists in our literature, and that we cannot show any collection of the numerous 'ski' types. This state of things is all the more deplorable because many of the more remarkable forms are fast disappearing and giving way to new.

It is not easy to decide which is really the best of these forms, as so much depends on the prevailing condition of the snow and the nature of the ground on which they are to be used. For rapid progress in a flat country and on the open mountain plateaux long and narrow 'ski' are best, while on rough, rocky ground and in the dense forest it is better to have short and broad 'ski,' which can be more easily turned and manipulated. In deep, loose snow, again, long, broad 'ski' of some light wood may be used with advantage.

The material of which 'ski' are made also varies much. In country districts pine, chiefly from the Scotch fir, is most used, as being the ordinary available timber. Birch is also very common, especially in the north, and, besides these, ash, elm, oak, mountain ash, aspen, willow, and maple are all employed. The first three of these latter, and especially ash, are in favour with Christiania 'skilöbers.' Several of these woods have their special good qualities, but it is scarcely possible to decide which is absolutely the best. Among the peasants a peculiar form of pine is also in use, the wood being taken from trees which have grown on the edge of bogs. This is, compared with ordinary pine-wood, very hard, tough, and resinous, and is much sought after.

Of late years the sport of 'skilöbning' has been practised and developed in Norway to quite an astonishing extent. This has been no doubt largely due to the public competitions which are now annually held, and above all to the great meeting of the year at Christiania. Here at their first institution the Telemarken peasants appeared and completely eclipsed the athletes of the capital by their masterly skill. In time, however, their arts were learned by the townsfolk, and it has often happened in recent years that the tables have been completely turned, at least in certain parts of the competition. The

progress of the sport has on the whole been quite remarkable, and anyone who has followed its development step by step, who can remember how empty and desolate the hillsides and forest paths round Christiania were some fifteen or even ten years ago, and who sees how the fields and woods are now thronged on a fine winter Sunday with 'skilöbers' of all ages, sexes, and conditions, cannot but regard the result of this healthy movement with gratification and pride.

'SKILÖBNING' IN THE OLD STYLE
(*From a drawing by E. Nielsen*)

Before this time of resurrection the 'skistav' or pole of which I have spoken above was generally considered quite as necessary a piece of apparatus as the 'ski' themselves. In those days, when the pace downhill became too hot to be comfortable, the 'skilöber' rode his pole like a witch's broomstick; to it he had recourse in all difficulties: it was his guide, comforter, and friend in all moments of danger and perplexity. It was a good friend, no

doubt, in need, and is so still even to the orthodox; but this unlimited and servile use of an extraneous support and assistance invariably brings the body of the 'skilöber' into a forced and helpless position, which entirely deprives him of all control over his 'ski' and of all confidence in the strength and power of his own legs. But the Telemarken peasant had meantime worked in quite a different direction, and had attained to quite a different form. When he met us in rivalry at Christiania he soon showed us that when one has really learned to control one's 'ski' without having continual recourse to one's staff one obtains a mastery over them which is quite impossible in the other case, and can with ease and speed clear obstacles and difficulties before considered insurmountable. The advantages of the new method were at once apparent, and the grace, freedom, and boldness of the 'Telemarking's' carriage and movements generally as compared with the stiff and clumsy manœuvres of the 'skilöber' of the old school were very striking.

This new departure led at once to a rapid development of the great art of jumping upon 'ski.' This, the great feature of 'skilöbning' from a purely sporting point of view, is really of no direct practical importance, as even the most reckless 'skilöber' is not in the habit of flying over precipices of unknown

depth, but is rather careful to avoid such obstacles when he is using his 'ski' in earnest and on unfamiliar ground. Jumping is a sport pure and simple, but at the same time a sport of great use and benefit, as there is no other branch of 'skilöbning' which tends in the same degree to develop power of balance, control of the 'ski,' or courage and confident bearing.

The jumping is done on a steep hillside, which has a gradient of perhaps from 30° to 40°. In the middle of the hill a bank of snow is built, or there may be some natural break in the ground or projecting rock which serves the same purpose. The jumper slides down from the top of the hill on to this bank, which, owing to the great pace which he has already attained, throws him far out into the air, whereupon after a longer or shorter journey through space he alights on the slope below and continues his headlong course at an even greater speed than before. The jumper may, and as a rule does, very much increase the length of his leap by gathering himself together and taking a spring just as he leaves the projecting bank. In this way sixty, seventy, or even ninety feet may be cleared when the snow is in good order and the hill and bank of suitable dimensions. A well-known 'skilöber' from Telemarken, Söndre Auersen Nordheim by name, is reported to

have jumped ninety-six Norwegian or ninety-nine English feet from a projecting rock, and to have kept his balance when he alighted below. The perpen-

JUMPING ON 'SKI' (*From a drawing by A. Block*)

dicular fall necessitated by such jumps is very considerable, from thirty to forty feet being no un-

JUMPING ON 'SKI'

(By E. Nielsen, from an instantaneous photograph)

common thing, a height which takes one to the roof of an ordinary three-storied house. This comparison will enable the reader to appreciate the magnitude

of the performance, which can otherwise hardly be realised by those who have never witnessed it.

While passing through the air the jumper must maintain all his presence of mind, must keep his 'ski' straight and under control, and as he touches the ground he will generally shoot out one foot rather in front of the other and sink on one knee to break in some measure the shock of contact. It is only the enormous speed attained and the elasticity of the snow which make such leaps possible, and therefore it is necessary that the slope of the hill should be quite as steep below the jump as above it, and that the snow should also be in a condition favourable for the purpose, since if the 'ski' are checked in the slightest degree at the moment of contact the difficulty of maintaining the balance is immensely increased. Of course violent falls are frequent, and the spectator who for the first time sees the unfortunate jumper rolling down the hill—arms, legs, and 'ski' all whirling round together in a cloud of snow—will naturally conclude that broken limbs must often be the result. As a matter of fact, however, serious accidents are extremely rare.

But the finished 'skilöber' must be able to do more than jump. At some of the open competitions he is also required to show his skill in turning his 'ski' to one side or the other within given marks,

and by bringing them quite round to stop short before any given obstacle, both of these manœuvres

'FACILIS DESCENSUS AVERNI.' AN AWKWARD CORNER
(From a drawing by A. Bloch)

having to be executed at full speed, that is to say, in the descent of a steep hill. In these arts the 'Tele-

markinger' are complete masters, and the younger school of Christiania 'skilöbers' have proved their worthy pupils.

But, apart from these special arts, 'ski' must be considered as being first and foremost instruments of locomotion, and therefore the speed which can be attained in an ordinary way across country must be regarded from a practical point of view as the most important branch of the sport. Though the jumping is always the most popular part of the programme, yet at our yearly meetings equal or greater weight is attached to the long race, for, it must be explained, the chief prizes are given for combined proficiency in the separate branches. It is sometimes thought, but very erroneously, that nothing is necessary but strength and endurance for success in a long race. But, of course, it is equally necessary to be thoroughly accustomed to the use of 'ski,' a state which is perhaps only arrived at in perfection by those whose training has begun in early boyhood. It is as a matter of fact very rarely that those who take to the sport at a more or less mature age ever become strong and skilful 'skilöbers.'

But, as I have already hinted, it must not be thought that 'skilöbning' is a sport which develops the body at all unequally. On the other hand, there can be few forms of exercise which perform this task

so uniformly and healthfully. The upper part of the body and arms come into constant use as well as the legs; the arms particularly by the help of the pole. This is especially the case if two poles be carried, a practice which is common among the Lapps, which has been adopted of late years in the Christiania races, and which was followed by us during our crossing of Greenland.

I have already given some idea of the speed to which a strong and clever 'skilöber' may attain. But so much depends upon those two most uncertain quantities, the nature of the ground and the state of the snow, that nothing like an absolute standard can be fixed. If the conditions be moderately favourable a good man should be able to cover from sixty to seventy miles in the course of a day's run.

The longest race hitherto brought off in Norway was held at Christiania in February 1888. The distance was 50 km., or 31 miles 122 yards, twice over a 25 km. course, which was laid out over hilly ground of a very variable character and included all kinds of difficulties calculated to test the competitors' skill. The race was won by a Telemarken peasant in 4 hrs. 26 min., without much pressure on the part of his rivals. A much longer race, no doubt the longest on record, was that organised by Barons Dickson and Nordenskiöld at Jokkmokk, in Swedish Lapland, on

April 3 and 4, 1884, and described at length in Nordenskiöld's 'Den andra Dicksonska Expeditionen till Grönland.' The winner was a Lapp, Lars Tuorda, thirty-seven years of age, one of the two who had accompanied Nordenskiöld on his Greenland expedition and had then done a great feat on his 'ski' on the 'Inland ice.' The distance on this occasion was 220 km., or nearly 136¾ English miles, and it was covered by the winner in 21 hrs. 22 min., rests included. The second man, a Lapp of forty, was only 5 sec. behind the winner, and of the first six, five of whom were Lapps, the last came in 46 min. after the first. The course was for the most part level, being laid mainly over the frozen lakes, and the snow must have been in a very favourable condition.

Earlier Arctic expeditions seem curiously enough to have made very little or no use of 'ski.' Some of those who have made attempts upon the 'Inland ice' have taken 'ski' with them, but on the whole more to their hindrance than their help. As long ago as in 1728 the idea was started in Denmark that if the interior of Greenland was to be explored it must be 'by sending some strong young Norwegians, who were accustomed to traverse the mountains in the winter on "ski" in pursuit of game, as they would be able to explore a large part of the

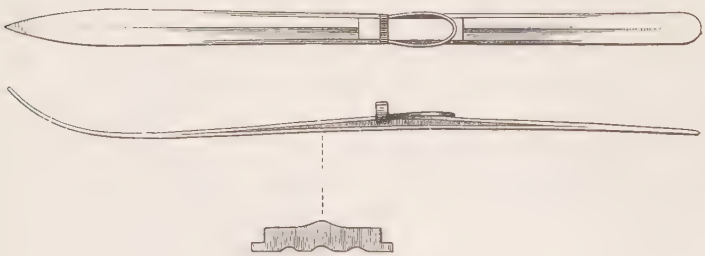
continent in all directions.' The plan was, however, never realised.

In a book entitled 'Nachrichten von Island, Grönland und Strasse Davis,' published at Hamburg in 1746, it is stated that a ship's captain attempted to penetrate into the interior of Greenland by all manner of expedients, employing 'even the long footboards, which are used, as is well known, by the Lapps and others for their winter traffic. But he failed to penetrate far, and after losing one of his men, who ventured too far on in front and sank into the depths before the eyes of the party, while they heard his shrieks and lamentations, but could not go to his help, he was obliged to turn back without his follower, and without any hope of ever advancing further.'

In 1878, too, the Danish expedition under Captain Jensen took 'ski' with them, but seem to have scarcely used them. Peary and Maigaard also had them in 1886, but the only time they have done good service was in the case of Nordenskiöld's two Lapps in 1883, to whose exploit I have already referred.

Finally I will say a few words about the 'ski' we made use of ourselves in the course of the expedition, which in the circumstances seem to find their place here more appropriately than in the preceding chapter on 'Equipment.'

Our 'ski' were not of any fixed Norwegian type, but were specially designed to suit the nature of the ground and state of snow which I expected to find in the interior of Greenland. We took nine pair, two of oak and the rest of birch. The oak 'ski' were 7 ft. $6\frac{1}{2}$ in. long, while in front at the curve they were $3\frac{5}{8}$ in. broad and $3\frac{1}{8}$ in. under the foot. On the upper surface was a ridge running the whole length of the 'ski,' which gave the necessary stiffness



THE 'SKI' OF THE EXPEDITION IN PLAN, ELEVATION, AND SECTION

without adding too much to the weight. On the under surface were three narrow grooves. The seven pair of birch 'ski' were of about the same form and dimensions, except that by the carelessness and negligence of the maker they were made rather narrower in front at the curve, the sides being parallel all through. This want of breadth in front prevents the 'ski' from riding so well upon the snow, as they act more like a snow-plough and move somewhat heavily. These 'ski' were delivered so

short a time before we left that we unfortunately were unable to get others and had to take them as they were. These birch 'ski,' too, were shod throughout with very thin steel plates, and in the middle of the plates, just under the foot, were openings $34\frac{1}{2}$ in. by $2\frac{1}{16}$ in., in which were inserted strips of elk-skin with the hair on. The object of the steel plates was to make the 'ski' glide better on coarse, wet snow, of which I expected a good deal, and that of

'LAUPARSKO' AFFIXED TO 'SKI,' SHOWING THE FASTENINGS

the strips of skin to prevent the 'ski' from slipping back during ascents and the heavy work of hauling as much as the steel-plates would have otherwise caused them to do. We found, however, none of this expected snow, and might well have done without these extra contrivances. The two pair of oak 'ski,' which Sverdrup and I used, proved in every way satisfactory, and I can thoroughly recommend the pattern for future work of the kind.

The fastenings we used were very simple, and

consisted in nothing but a toe-strap of thick, stiff leather and a broadish band of softer leather running round behind the heel. The stiff fastenings of withies or cane which are commonly used in Norway for jumping and ordinary work generally are in my opinion quite unsuited to the conditions of a long exploring journey. They are by no means necessary for a complete control of the 'ski,' and they tire and chafe the feet much more than a soft and flexible fastening like leather. My experience tells me that the less one is conscious of the pressure of the fastenings in these long journeys, the less one draws upon one's stock of endurance.

CHAPTER IV

THE VOYAGE TO ICELAND

As I have already said, I proposed to reach the east coast of Greenland by getting a Norwegian sealer to pick us up in Iceland and take us on further. After negotiations in several quarters I finally came to terms with the owners of the sealer 'Jason' of Sandefjord. It was agreed that the ship should call for us in Iceland, and do its best to put us ashore on the east coast of Greenland, while I, on our part, undertook that she should suffer no pecuniary loss by having to neglect her own business on our account. My agreement with the captain of the 'Jason,' Mauritz Jacobsen, a cool-headed and experienced Arctic skipper, was that on his way to Denmark Strait, after the season was over in the Jan Mayen waters, he should call for us in Iceland about the beginning of June, at Isafjord for preference, or Dyrafjord in case ice should prevent him getting into the former place.

On May 2 I left Christiania to go by way of Copenhagen and London to Leith, where I was to meet the other members of the party. They left

Christiania the day after me, taking steamer from Christianssand to Scotland, and carrying the whole outfit of the expedition with them.

Many sensible people shook their heads doubtfully, and took us sadly by the hand the day we left. They evidently thought, if they did not say:—'This is the last time we shall see you, but God grant that you never manage to reach land!' There was a deal of excitement, too, caused by this absurd little expedition, which could not even rise to the dignity of its own steamer, but had to leave home in an ordinary passenger-boat, the owners of which, by the way, had liberally given it a free passage. Of cheering, too, there was plenty in our honour. People thought it was just as well to give these poor fellows some gratification during the short time now left to them for the enjoyment of life. In Ravna's case this enjoyment was for the moment brief indeed, for he had to sacrifice to the gods of the deep or ever he reached the open sea.

Balto thus describes the departure from Christiania:—'As we passed out of the town on our way to the quays great numbers of men and women accompanied us, to wish us good luck and cheer us on our way. We were received with similar demonstrations by the people of all the little towns from Christiania to Christianssand, for they thought we

should never come back alive. They expected, perhaps, that we should meet with the same fate as Herr Sinklar, when he set out for Norway to plunder and to ravish.'

In Copenhagen I paid a visit to Captain Holm, the leader of the Danish 'Konebaad' Expedition, of which I have already spoken, and obtained from him much valuable information as to the state of the ice on that part of the coast along which he had passed. Here also I met Herr Maigaard, who in 1886 had penetrated, together with the American explorer Peary, some distance into the interior over the ice. He was one of the very few who were sanguine as to the result of the expedition, and had no doubt of the possibility of crossing the Greenland continent.

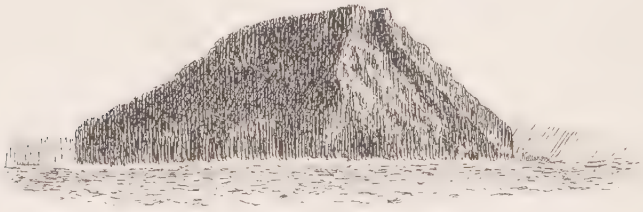
I met the rest of my party in Leith again, and found them enjoying themselves much, thanks to the kindness of their fellow-countrymen there resident. Balto in his narrative speaks of the Norwegian Consul as a 'new father' to him, and a hospitable entertainer of the whole party. If the truth be told, Balto managed to find 'new fathers' in many different places.

After receiving many proofs of Scottish kindness and hospitality, on the evening of May 9 we went on board the Danish steamer 'Thyra,' which lay at Granton, and which was to take us the first stage of

our journey to Iceland. It was midnight when we said good-bye to the last of our friends, who saw us off on the deserted quay, and then we steamed out into the darkness on our way northwards.

OUR FAROËSE PILOT
(*From a photograph*)

After two days or more of fair weather we reached the Faroe Islands, that strange little group of basaltic rocks on which much of the old Norse speech and civilisation still remains. We called first at Trangisvaag, a tiny inhabited spot on the most southerly island, Suderö, lying by a little inlet and surrounded by low mountains of basalt, but, as far as I can learn, a place of no special interest. After some hours' stay we went on towards



LITTLE DIMON
(*After a photograph*)

Thorshavn in a stiff wind and a moderate fog, though we could see Great and Little Dimon as we passed. These are two little basalt islands rising almost per-

pendicularly out of the sea, which serve chiefly as the resort of countless sea-birds. Great Dimon has one settler only, whose farm lies at the summit of the island on its southern side. Goods and packages are lowered down the precipitous cliffs to the water's edge, while the inhabitants use a breakneck path, which in some places is hewn out of the rock itself. The sides of the island are so abrupt that no boat can be kept there through the winter, all having to be taken away in the autumn. If the inhabitants want anything they must make the recognised signals and their neighbours will come to them if they can, but from the beginning of November to the end of March it is, as a rule, impossible to land, as the sea is far too violent. Through these months, therefore, the islanders are often entirely cut off from the world. I was told that some years ago these poor people let their fire out in the middle of November, and, as they had no matches, they had to pass nearly

A BIRD ROCK IN THE FAROE ISLANDS
(*After a photograph*)

half a year without light, warmth, or anything but uncooked food.

On the afternoon of the third day from Leith we arrived at Thorshavn, which, as everybody knows, is the capital of the Faroe Islands, and the residence of the 'Amtmand,' or Governor, and other officials. It has its own newspaper, 'Dimmalætting' or 'Dawn,' which is printed in Faroëse, and is published every Saturday. There is also a little fort of three guns, and a garrison reported to consist of something like twelve men. The walls were just of sufficient height to allow of our jumping over them when we went up to inspect the position and found the gates locked

The town lies by two inlets and on somewhat broken ground. It is surrounded by small hills and eminences, which again are backed by heights which at the time of our visit were clad in snow. As seen from the sea the place is not at all unlike an ordinary Norwegian sea-coast town.

The inhabitants, like those of the Faroe Islands generally, live to a large extent on the produce of their fisheries. Sheep-farming is also an important industry, and the number of these animals quite unusual, as they reach the high average of eighteen per head of the population.

As bad weather kept us in Thorshavn from Saturday till Monday, we had an opportunity of

witnessing the national Faroëse dance, which is held every Sunday evening at ten o'clock.

This is the strangest performance in the way of dancing which I have ever had the luck to see. All the participators—in this case there were something

AN ARCH OF WHALE'S JAWS AT THORSHAVN
(From a photograph)

like a hundred of the two sexes—together, promiscuously, and without any order or sign of partnership, seize each other's hands and form in a large ring or long chain. They then set off to a slow polka-like step in rhythm with some ancient ballad, which is chanted, generally in Faroëse, but some-

times Danish, to a monotonous and dragging air by the whole company of dancers. The singing is vigorous beyond all description, the main object of each performer being apparently to out-sing the rest. This tramp is kept up continuously without change in the step, and with no variation at all except for the windings and undulations of the chain, till one or two o'clock in the morning, and on specially solemn occasions, as a matter of course, much later.

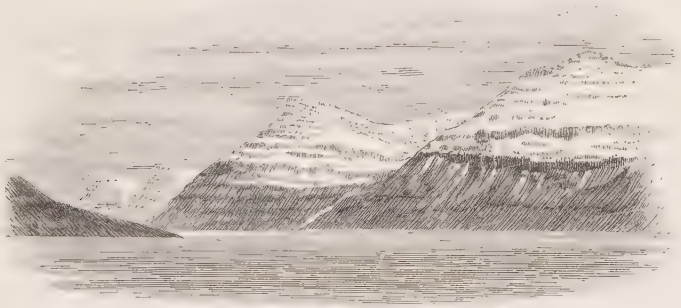
Anyone who wishes to join the dance breaks the chain where he pleases and takes his place. Several of our party did this at once, naturally taking care to choose the most desirable points in the long line, and displaying in the course of the performance an amount of energy and endurance worthy of a better cause.

This seems to be the only form of dance practised on these islands. No doubt it is a legacy of the ancient Norsemen, and it even seems that a similar diversion still existed in Iceland during the last century, and was there called 'Vikivaka.' In Norway it has probably disappeared long since, which is not to be wondered at, seeing that the attractions of the performance are of so exceedingly obscure a nature. I for my part could not at all discover wherein the enjoyment consisted.

There is something very quaint in such survivals

of the past, something almost touching in the fact that these people come together every Sunday evening to dance a dance which has long since disappeared elsewhere, and to sing venerable ballads the meaning of which can scarcely be intelligible to them now.

On Monday morning we reached the little village of Klaksvig, the most northerly place of call on the Faroe Islands. It is buried among basalt mountains,



BASALT MOUNTAINS IN HARALDSUND, SEEN FROM KLAKSVIG

(*From a sketch by the Author*)

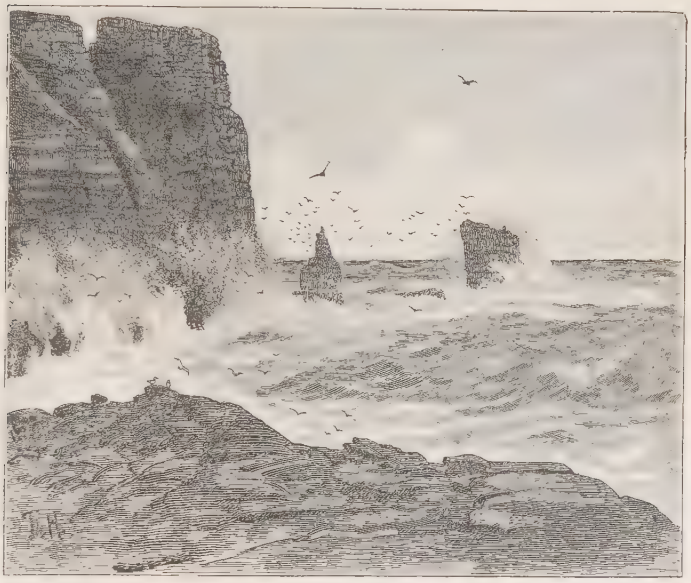
which even for these islands are remarkable for their terraced structure and severely geometrical forms. After two or three hours' stay we were off again, and on our way seawards had fine opportunities of admiring the wealth of wild fantastic outlines so characteristic of the northern coast of the group.

The temperature now began to remind us that we were approaching more northerly latitudes. The Lapps in their tunics of reindeer-skin were comfort-

able enough, but some of the rest of us, who had no furs, had to admit that we found the air somewhat chilly. This gave Ravna occasion to deliver himself of some very grave speculations, which he confided to Balto. Balto at once came and reported to us :— 'Ravna wants to know why we have been foolish enough to come with people like you, who have so few clothes. He sees you shivering here, and he says you will die in Greenland, where it is so cold, and then we Lapps must die too, because we shall never find our way out again.'

Ravna did not on the whole seem to enjoy himself much on board. At first he was sea-sick, though he got over this after some days, but he never really found his sea-legs, and he could never sleep comfortably below. The air was too close for him down there, so he used to draw his tunic over his head, slip his arms inside, and lie curled up like a dog in some corner of the deck, and thus managed to sleep quite as well as we. Balto, who was already used to the sea, made himself at home at once, became great friends with the crew, and was a leading spirit in the forecastle, where the abundant flow of liquor was quite to his taste. After making an absurd exhibition of himself one day, he was moved to a temporary repentance and promised not to offend in this way again.

From the time we left Scotland I began taking daily samples of the air by means of the apparatus I have already mentioned. The object was mainly to measure the amount of carbonic acid prevalent in the different regions. I continued this sample-taking



ROCKS ON THE NORTH COAST OF THE FAROE ISLANDS
(*By Th. Holmboe, after a photograph*)

regularly across the sea to Iceland and thence to the east coast of Greenland, and brought also home with me a certain number of specimens from the 'Inland ice' itself.

While we were in the Faroe Islands we had heard bad news of the state of the ice round Iceland. It

was said that it had come farther south this year than had been known within the memory of man, and the east coast of the island was reported inaccessible. This was confirmed only too soon, for we met the ice when we were hardly within 140 miles of shore. We pushed on northwards to see if we could reach land further up, but it was to no purpose, as the ice was everywhere. Several sailing vessels too, which we met, informed us that it extended a long way to the north.

On the next day, Wednesday, May 16, we made another attempt to reach land on the eastern side, though this was off Berufjorden, a long way south; here, too, we were stopped some ninety miles from land. This left us nothing to do but make for the south-west, and we steamed along the rocky and picturesque southern coast with a fair wind behind us. In the evening we passed Öræfajökull, the highest mountain in Iceland, which rises out of the sea to a height of some 6,400 feet. As the setting sun cast its last rays upon the mountain's snowy sides, and on the veil of mist which enwrapped its summit, while now and again the breaking of the veil allowed us to see for a moment the soft outlines of the conical peak, the scene was one of unusually impressive grandeur.

On the morning of the next day, May 17, we

approached the Vestmanna Islands, which lie some miles to sea, off the middle of the southern coast of Iceland. It was a glorious sunny day, and the sea was smooth and bright as glass as we glided in between the lofty precipitous basalt rocks which form this group of islands and lay to off Heimaey, the largest of them all, and the only one inhabited.

THE VESTMANNA ISLANDS AND THE EYAFJALLAJÖKUL AT SUNSET
(By Th. Holmboe, from a sketch made by the Author in 1882)

Here also, as in the Faroe Islands, the sea eats away the

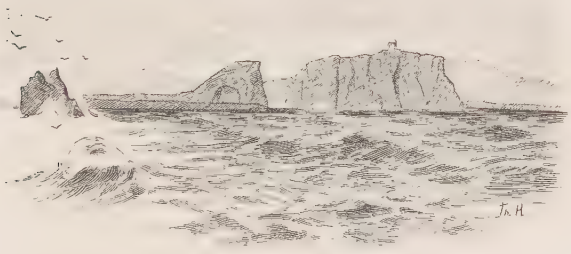
layers of basalt rock, leaving perpendicular walls which fall sheer into the sea and are honeycombed with great cavities and grottoes. The whole scene had a distinctly Mediterranean aspect and at once suggested a comparison with Capri, not by any means to the latter's undisputed pre-eminence. We were steaming straight for these wonderful cliffs,

CLIFFS ON THE NORTH SIDE OF THE VESTMANNA ISLANDS
(*From a photograph*)

about which the breakers threw their spray and the screaming sea-birds wheeled in thousands. There was something strangely fascinating in the whole: a brilliant summer-like day, a bright green sea as clear as crystal, and right opposite us, on the mainland, the highest peak but one in Iceland, the volcano Eyafjallajökul, whose great white snow-mantle lay before

us, still glittering in the evening sun. In the background, again, were other peaks and glaciers, among which the huge white dome of Hekla was most prominent.

Later we passed Reykjanæs, which carries the only lighthouse which Iceland possesses. The spot is one of absolute desolation, and is especially exposed to shocks of earthquake, which have already



THE ONLY LIGHTHOUSE IN ICELAND
(*By Th. Holmboe, from a sketch by the Author*)

damaged the lighthouse and threaten before long to demolish it altogether.

Beyond are a few rocks and islands which are chiefly remarkable for the number of Great Auk (*Alca impennis*) to which they formerly gave shelter.

After a hard struggle against a head wind and heavy sea, which again and again completely neutralised the 'Thyra's' efforts to push on, we reached Reykjavik, the capital of Iceland, in the course of

the night. Our stay was short, but next morning we were allowed some hours on shore.

We could not find much to interest us in the little town. Among its few stone buildings are the Cathedral and the place of assembly of the 'Althing' or Parliament of Iceland. These are built of lava, which is of course abundant on the island, and it is

REYKJAVIK AND THE ONLY ROAD IN ICELAND
(*From a photograph*)

a matter for wonder that more use is not made of it, seeing that every log and plank of wood has to be imported.

In Reykjavik bureaucracy seems to have reached a high pitch of development. I was told that the town possessed no fewer than forty officials, which gives at least one for every hundred of the popu-

lation. One would have almost thought that this superfluity of magnates betokened the possession of wealth, but the poor little community could doubtless tell another tale.

About mid-day we left again after having paid a visit on board the Danish man-of-war, the 'Fylla,'

THE 'THYRA' PASSING SNEFELLSJÖKULL
(*By Th. Holmboe, from a sketch by the Author*)

which steamed into the harbour just as we were about to start.

We now set our course for the promontory of Snefellsnæs on our way north to Isafjord, our eventual destination. In the evening, just as the sun was setting, we passed Snefellsjökull, an old volcano which lies on the extreme point of the promontory. The

peak is most impressive as one passes close beneath it, for it rises out of the sea to a height of more than 4,500 feet. It is well known as a most useful sea-mark, and its white cap has guided many a vessel into safety. As we passed it was perhaps at its best, as the last rays of the sinking sun were just reddening its mantle of snow.

Whereas May 18 had been comparatively spring-like, the day following plunged us into the depth of winter again. When we came on deck in the morning we were met by a stiff breeze from the north, with sleet and snow. The high basalt mountains on the mainland were decked from head to foot in white, and the floes which we saw floating by from time to time were precursors which assured us that the main body of ice was not far off. We were now close to Ömundafjord, and, as the breeze promised to increase to a gale and the snow was falling thickly, we took refuge in the excellent harbour which the inlet affords, there to await better weather. The storm now increased rapidly, and we had full opportunity of learning what the wind of these northern parts can do. No one ventured on deck who was not obliged. One could keep one's feet there indeed if it were necessary, but to bring one's nose for more than an instant out of shelter was an experiment to which there was little temptation. The ship, however,

lay very comfortably where she was, and, as it happened to be Whitsun Eve, we did our best to make things as pleasant as possible down below.

When we woke next morning we were already in Isafjord, where we intended to go ashore. Here, too, winter prevailed no less absolutely, and everything was under snow. Isafjord is the second of the three towns of Iceland, and is a pretty little place, buried, together with its excellent harbour, among the surrounding mountains.

Here I was told that the drift-ice lay not far to the north, as it had, in fact, come south of Cape Nord. Strong northerly winds might bring it still farther south, and block the approach to the fjord. It was extremely rarely that this had happened, but there was just a possibility of it, and the 'Jason' might have some difficulty in getting into Isafjord to fetch us. To avoid this risk I made up my mind to go back to Dyrafjord, which lies a little farther south, and is never blocked by the ice, and await her there, as we had agreed to do if it were necessary. So I sent a letter ashore for the 'Jason's' captain, telling him of our movements, and we started southwards again.

Next morning when we came on deck the weather was splendid, and we were running fast up the approach to Dyrafjord. The winter had now retired to some extent to the mountains, and along the sea-

shore there were a few signs of spring to gladden us. We were soon anchored off Thingeyre, the little trading-centre of the fjord, and we now took leave of the captain and crew of the 'Thyra,' who had from the first done all they could to make our stay on board as pleasant as possible, and who now fired a farewell salute in our honour.

At Thingeyre we were hospitably welcomed by Herr Gram, the merchant of the place, who had kindly offered us shelter while we were to wait for the 'Jason.'

The little hamlet lies on an 'eyre,' the Norwegian 'ör,' so common in place-names in the west of Norway, a flat stretch of sandy soil running out into the fjord. Here the 'eyre' is part of an old moraine, which dates from the time when Iceland was covered with a mantle of ice, and which was driven before it by the great glacier which then filled the fjord, and to some extent, at least, helped to excavate it and deepen it. Farther in, towards the end of the fjord, are several of these moraines lying parallel with one another. They stretch straight across the inlet, partly above and partly below the surface of the water, and often make the navigation of the fjord difficult.

Dyrafjord lies between steep basalt mountains of the same character as those of the Faroe Islands. At

the end of the inlet the imposing Glámujökull forms a barrier. It is of no great height. I made it subsequently about 2,900 feet, but it is at least the highest mountain on the peninsula of Vestfirdir, which, in fact, is almost an island in itself, as it is only connected with the mainland by an isthmus some six miles in width.

One day our whole party undertook the ascent of Glámujökull. We took both our 'ski' and

DYRAFJORD AND GLÁMUJÖKULL, FROM THINGEYRE
(*From a sketch by the Author*)

'truger,' for we imagined the snow might be deep and soft higher up. This was not the case, for it was quite hard enough to walk upon, and in excellent condition for our 'ski,' too excellent indeed for one of the party, as the sequel unfortunately proved. The weather was charming, and the view from the top most striking. The whole country hereabouts is most remarkable, a high plateau, surprisingly flat and level, stretching far away in front, and falling abruptly into the sea on every side. In the back-

ground to the south is Snefellsjökull, rising high above all else, its lofty cone quite unmistakable. The view at once gives one a clear impression of the way the land has been formed, how the streams of liquid basalt have flowed quietly and evenly to every side and formed a large unbroken plateau; how the frost and rain, and then the glaciers, have worked upon this plain, and at its edges especially have graven out fjords and valleys. It is only the extreme edge that

THE BASALT PLATEAU SEEN FROM GLÁMUJÖKULL
(*From a sketch by the Author*)

has been cut and chiselled in this way, while the inner plateau seems to be still in much the same condition as when it was first formed.

On the way home we slid down the steep slopes, which gave us the best hills for our 'ski' which we could have wished. The snow was hard, and our 'ski,' which were shod with steel, flew over it as if it had been glass. This speed, however, led to an unfortunate accident. My younger Lapp, Balto, who was by no means as experienced a 'skilöber' as I

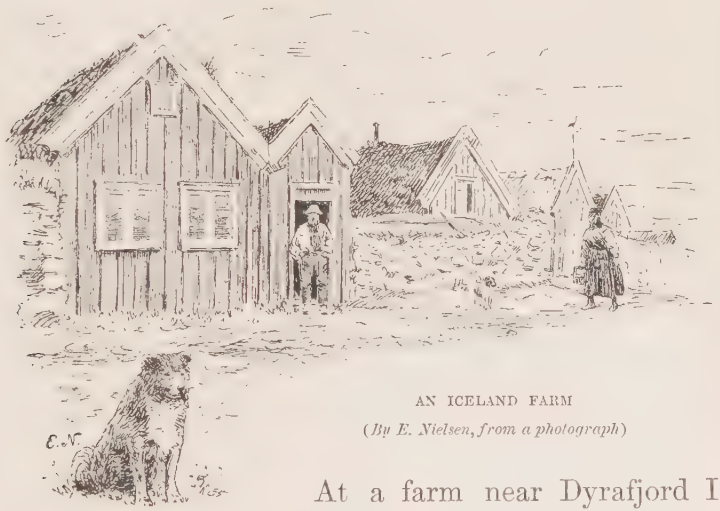
had reason to expect, ran on too recklessly, and came to utter grief over a projecting rock. The fall strained his right knee so badly that it was all we could do to get him home. On the way up he had as usual been talking a great deal about his proficiency, and declaring that he and his fellow Lapp would find no difficulty, as they could put their poles between their legs and then run where they pleased. We had just started down the first steep slope, and Balto was proceeding to ride his staff in the way proposed, which is a device for slackening speed, often adopted by the less sportsmanlike, when the catastrophe happened, and his failure was so absolute and absurd that, in spite of its serious nature, we could not restrain the laughter he so well deserved.

Balto remained an invalid for some time. I really thought I should lose one of my men, and even went so far as to contemplate taking an Icelander instead, though it was not at all likely that I should have found anyone ready to go. However, daily 'massage' so strengthened his leg that I soon began to have hopes of his ultimate recovery, though he was in despair himself and very despondent altogether. Ravna was in very low spirits too, for he thought he would either lose his comrade and have to go alone, or stay behind and forfeit the promised remuneration.

On the whole our stay at Thingeyre passed quickly enough, and we spent our time climbing mountains, shooting on the fjord, riding, and paying visits to the farmers. Our best sport without comparison was riding the excellent little Iceland ponies. When you get on to the back of one of these sturdy little beasts, and find your feet almost dragging upon the ground, you feel that the position is not one of dignity, and have an uncomfortable suspicion that the pony's back must give way sooner or later. But when he starts off at the wildest of gallops over stretches of loose stones which fly under his feet, through bogs where he sinks to far above his fetlocks, over brooks and through ravines, up steep mountain-sides and down rocks and slippery declivities—in short, over a country in which to an ordinary horse the first few steps would mean the loss of a couple of legs, and all the while at the same reckless breakneck pace, but with never the suspicion of a stumble, your respect for this, without doubt, the best mountain-pony in the world is at once established. You are most astonished perhaps when you

AN ICELAND MAIDEN
(*By A. Bloch, from a photograph*)

come to a river and see your little steed plunge without more ado into the stream and wade or swim across, while the rider must do his best to keep dry by bringing his feet up on to the horse's back at the imminent risk of being plunged into the water by an unexpected movement. As the reader probably knows, there are no roads or bridges in Iceland, and riding is the universal mode of progression.



AN ICELAND FARM
(*By E. Nielsen, from a photograph*)

At a farm near Dyrafjord I bought a little pony to take with us for the purposes of the expedition. I meant to use it to help us with our boats and baggage in the floes, and, if we could get it so far, on the way up on to the 'Inland ice.' I was not sanguine that it would be of much use to us, but when we were obliged to kill it it would give us many a meal

of good fresh meat. When I left Norway I had thought of buying two ponies, but when I saw what they could do I felt sure one would be quite enough.

As it happened our little beast was not of much use. In the spring it is not easy to get fodder in Iceland, and in spite of all my efforts I could only scrape together enough for a month.

The pony we took was a very handsome little animal, and, curiously enough, he was used to the work we wanted him for, as he had been put to the plough for a while, which is quite unusual in Iceland, where the ponies are as a rule used only for riding or as pack-horses.

One morning during our stay in Dyrafjord a three-masted vessel came steaming into the fjord and dropped anchor in the harbour. This was the Danish man-of-war, the 'Fylla,' which we had left at Reykjavik. Her arrival was a pure source of joy to us, and much added to the pleasure of our stay.

Our time, however, was now drawing nigh, and, as we expected to see the 'Jason' every day, we grew almost impatient for her arrival.

On June 3, in the morning, we could see far out at the mouth of the fjord a little steamer slowly working inwards. At first we could make nothing of her, but soon came to the conclusion that she must be one of the small steamers used by the

Norwegian Whaling Company in Isafjord. As she came nearer we made her to be the 'Isafold,' which is one of these boats, but what she could want here on a Sunday morning we could not imagine. After saluting the 'Fylla' she anchored and sent a boat on shore amid our increasing excitement. I had begun to suspect the truth, when, to my astonishment as well as joy, I recognised in the first who stepped ashore Captain Jacobsen of the 'Jason.' Our meeting was almost frantic, but the story was soon told. He had reached Isafjord and, not finding us there, had thought of coming on to Dyrafjord with the 'Jason.' But with the strong wind blowing it would have taken his heavily-rigged ship a whole day to make the voyage, and, as the Norwegian Company's manager most kindly offered to send the 'Isafold' to fetch us, he had taken the opportunity of coming too.

We lost no time in getting ready, and there was no lack of willing hands to bring our goods on board. Amid general interest our little pony was led on to the landing-stage. He did all he could to resist, poor little fellow, and had almost to be carried; had he but known the sad fate in store for him, I scarcely think we should have got him on board at all.

When all was done and we had said farewell to

Herr Gram, our kind entertainer, and the other friends we had made in Dyrafjord, we steamed out of the fjord and to sea northwards. The 'Fylla' gave us her last greeting, and her band played our national song, 'Mens nordhavet bruser,' till we passed out of hearing of its tones. The same evening we anchored in the harbour of Isafjord amid salutes from the little steamer which carried us, as well as from the 'Jason.' The latter was decked throughout with flags, which, as Balto picturesquely writes, reminded him 'of the red cloudberries on the bogs at home.' As we boarded our new ship we were received with a ringing cheer by the whole crew.

The 'Jason,' as we learned, had been tolerably successful hitherto, as she was also the whole season as compared with her fellows. Up to this time she had taken 4,500 young seal and 1,100 old.

CHAPTER V

CRUISING IN THE ICE

On the evening of June 4, after a brilliant sunny day, we weighed anchor in Isafjord. As we steamed out the sun was just bestowing a last caressing gleam upon the basalt cliffs. Their western sides were warm and bright with the evening glow, while cold shadows filled all the clefts and fissures among the terraces above and the furrows worn by the water in the lower slopes, the characteristic horizontal lines of structure being thus thrown into still sharper distinctness. A singular landscape, indeed!

Then we bade our last farewell to this fragment of Europe and stood out to sea.

As we leave the land behind us we are followed by hundreds of kittiwakes, in billowy masses of white and blue, chattering in endless chorus, now sinking as they swoop low on extended wing over the vessel's wake, now rising as they soar lightly in their graceful evolutions up towards the blue sky.

Here was an opportunity for the display of one's shooting powers. To hit these birds on the wing

with a bullet is not the easiest of feats, and with saloon-rifles and revolvers we set to work to test our skill. Most of our shots fly wide: the bird only shakes its wings and sails on further. Presently one is struck, but not killed. With flapping wings it sinks struggling to the sea. Poor, helpless victim! The ship holds on her course. She cannot stop at the shriek of a wounded bird, but for long we can see it far away behind us beating the water with its useless wings and surrounded by its comrades, they uttering their plaintive and reproachful cries. An uneasy shudder stirs the shooters. What a monster man must be, causelessly and thoughtlessly to sacrifice a happy bird for the sake of a doubtful pleasure! And my conscience pricks me too!

There was no more shooting that day. Such a thing is remembered for a time and then forgotten, though sometimes the recollection steals upon one yet again—a poor struggling bird on the calm surface of the sea at sunset arising from the mist of memory—and a wave of irresistible melancholy sweeps over the mind.

Indeed, many such winged and struggling birds are the victims of a hunter's life, though seldom so utterly without reason as in this case. Here we have not even the imperious struggle for existence in excuse.

Before we leave the Iceland fishing-grounds we must try and procure ourselves a dish of fresh fish. The Norwegian sealers make it a rule to get a catch as they pass the well-stocked coast of Iceland at the end of May or beginning of June on their way to Denmark Strait. We are, of course, no exception, and it is no wonder that our crew are on the look-out for something fresh, as they have now spent some three months on little but salt food and preserved meat. Seal-flesh they are foolish enough to refuse to eat.

So some few miles from land we heave to, and our lines are let out in a suitable depth of water. Then follows a couple of minutes' silent expectation. Are there fish here? we wonder. Yes, there are a few good tugs at one of the lines, and it is pulled up. We bend over the ship's side, see something white far down in the water, and a big struggling cod is hauled up on to the deck. Presently there follow fish after fish, and then comes a lively competition for the biggest take. It is not long before we have a good supply, enough and more for every man on board. This will do as far as the cod go, but we may as well get hold of a few halibut too. So we move a bit farther out to where the halibut banks are supposed to be. We try our luck, but here with no success. We change our ground and try again,

with the same result. Well, we have no time to spare for this; we give up the attempt and set our course westward for the ice.

It is a glorious northern night. The sun has sunk into the sea; in the west and north the day has laid herself dreamily to rest in her sunlit bath. Above are the coloured heavens; below, the sea, calm as a mirror and rocked to sleep in melancholy thought, while it reflects in still softer, gentler tones the mellow radiance of the sky. Between heavens and sea is the black form of the 'Jason,' labouring and moaning as her engines drive her westward. Behind us the rocky coast of Iceland, a fringe of violet blue, is slowly sinking into the sea. Behind us lie home and life: what lies before us? We cannot tell, but it must be beautiful. A start on such a night is full of promise.

I am sitting alone in the stern of the vessel and gazing out into the night at the gathering clouds, which, still tinged by the sun, are sailing over the horizon to the north-west. Behind them lies Greenland, as yet invisible.

All nature is, as it were, sunk in her own dreams, and gently and quietly the mind, too, is drawn back into itself to pursue the train of its own thoughts, which unconsciously borrow a reflection of the colours of the sky.

Among all things that are beautiful in life are not such nights most beautiful?

And life—is it much more than hope and remembrance? Hope is of the morning, it may be, but on such nights as this do not memories, all the fair memories of bygone days, arise dewy and fresh from the mists of the distant past and sweep by in a long undulating train, sunlit and alluring, till they disappear once more in the melting western glow? And all that is mean, all that is odious, lies behind, sunk in the dark ocean of oblivion.

The very next day, June 5, we reached the ice, which this year has come a long way south.

The impression which the floe-ice of the Arctic seas makes upon the traveller the first time he sees it is very remarkable. Most people will find that what they actually see is not a little different from what they have expected. A world of wonders and enchantments, a complete horizon of wild fantastic forms, ever changing, ever new, a wealth of brilliant rainbow hues playing and glowing amid the cold purity of the crystal ice, such are the features of the picture which the ingenuity of the imagination so often fondly creates. Such, too, are often the illustrations of books, written apparently to give the reader impressions of scenes which the writer can never have beheld himself. But not such is this ice-world.

These mighty fantastic forms are wanting; all is monotony and uniformity, features which nevertheless leave an indelible impression on the mind. In small, indeed, it has forms enough and in infinite diversity, and of colours all tints and strange effects of green and blue, flashing and playing in endless variation; but, as to its large features, it is just their overpowering simplicity of contrast which works so strongly on the observer's mind: the drifting ice, a huge white glittering expanse stretching as far as the eye can reach, and throwing a white reflection far around upon the air and mist; the dark sea, often showing black as ink against the white; and above all this a sky, now gleaming cloudless and pale-blue, now dark and threatening with driving scud, or again wrapped in densest fog—now glowing in all the rich poetry of sunrise or sunset colour, or slumbering through the lingering twilight of the summer night. And then in the dark season of the year come those wonderful nights of glittering stars and northern lights playing far and wide above the icy deserts, or when the moon, here most melancholy, wanders on her silent way through scenes of desolation and death. In these regions the heavens count for more than elsewhere: they give colour and character, while the landscape, simple and unvarying, has no power to draw the eye.

Never shall I forget the first time I entered these regions. It was on a dark night in March 1882 when we, on board a Norwegian sealer, met the first floes in the neighbourhood of Jan Mayen, and ice was announced ahead. I ran on deck and gazed ahead, but all was black as pitch and indistinguishable to me. Then suddenly something huge and white loomed out of the darkness, and grew in size and whiteness, a marvellous whiteness in contrast to the inky sea, on the dark waves of which it rocked and swayed. This was the first floe gliding by us. Soon more came, gleaming far ahead, rustling by us with a strange rippling sound and disappearing again far behind. Then I saw a singular light in the northern sky, brightest down at the horizon, but stretching far up towards the zenith. I had not noticed this before, and as I looked I heard a curious murmur to the north like that of breakers on a rocky coast, but more rustling and crisper in sound. The whole made a peculiar impression upon me, and I felt instinctively that I stood on the threshold of a new world. What did all this mean? Were these the fields of ice in front of us and to the north? But what were the sound and light? The light was the reflection which the white masses of ice always throw up when the air is thick, as it was that night, and the sound came from the sea breaking over the floes while they

collided and grated one against the other. On still nights this noise may be heard far out to sea.

But we drew nearer and nearer, the noise grew louder, the drifting floes more and more frequent, and now and again the vessel struck one or another of them. With a loud report the floe reared on end, and was thrust aside by our strong bows. Sometimes the shock was so violent that the whole ship trembled and we were thrown off our feet upon the deck. Not long, indeed, were we allowed to doubt that we were now voyaging in waters new and strange to us. We shortened sail, and for a day or two cruised along the edge of the ice. Then one evening it blew up for a storm, and, as we were tired of the sea, we resolved to push into the ice and ride out its fury there. So we stood straight ahead, but before we reached the margin of the ice the storm fell upon us. Sail was still further shortened, till we had but the topsails left, but we still rushed inwards before the wind. The ship charged the ice, was thrown from floe to floe, but on she pushed, taking her own course in the darkness. The swell grew heavier and heavier, and made things worse than ever. The floes reared on end and fell upon each other; all around us was seething and noise; the wind whistled in the rigging, and not a word was to be heard save the captain's calm but vigorous orders, which prevailed over the roaring of the sea.

Precisely and silently were they obeyed by the pale men, who were all on deck, as none dared risk his life by staying below, now that the ship was straining in every joint. We bored steadily inwards into the darkness. It was no use trying to guide the vessel here; she had to be left to herself, like the horses on the mountains at home. The water seethed and roared round our bows; the floes were rolled over, split in pieces, were forced under or thrust aside, nothing holding its own against us. Then one looms ahead, huge and white, and threatens to carry away the davits and rigging on one side. Hastily the boat which hangs in the davits is swung in on to the deck, the helm is put down, and we glide by uninjured. Then comes a big sea on our quarter, breaking as it nears us, and as it strikes us heavily we hear a crash and the whistling of splinters about our ears, while the port is thrown across the deck, a floe having broken the bulwarks on the weather-side. The ship heels over, we hear another crash, and the bulwarks are broken in several places on the lee-side too.

But as we get further into the ice it grows calmer. The sea loses its force, the noise is deadened, though the storm tears over us with more fury than ever. The wind whistles and shrieks in the rigging, and we can scarcely keep our footing on the deck. The

storm seems to rage because it cannot roll at its will in the open sea; but here at last we can ride at our ease. We had played a dangerous game by taking to the ice in a storm, but we had come out of it unscathed and were now in smooth water. When I came on deck next morning the sun was shining, the ice lay white and still around us, and only the broken bulwarks grinning in the morning sun called to mind the stormy night.

This was my first meeting with the ice. Very different was it indeed this second time. We saw it now on a fine bright day, a dazzling white expanse quivering and glittering in the sunshine far away towards the horizon, while the sea rocked gently and peacefully against its edge.

It must not be supposed that this drifting ice of the Arctic seas forms a single continuous field. It consists of aggregations of larger and smaller floes, which may reach a thickness of thirty or forty feet or even more. How these floes are formed and where they come from is not yet known with certainty, but it must be somewhere in the open sea far away in the north, or over against the Siberian coast where no one has hitherto forced his way. Borne on the Polar current, the ice is carried southwards along the east coast of Greenland. Here it meets the swell of the sea, and the larger solid masses are

MY FIRST MEETING WITH THE POLAR ICE (1882)

(By Th. Holmboe)

broken into smaller and smaller floes as they come farther south. By the pressure of the waves, and consequent packing, the floes are sometimes also piled one upon another, and then form hummocks or crags of ice which may often rise twenty or thirty feet above the water.

It is this broken and scattered polar ice which the sealer meets in Denmark Strait, and it is among these floes, which can indeed be dangerous obstacles enough, that he forces his way with his powerful vessel in pursuit of the bladder-nose.

For several days we worked southwards, skirting the ice. On Wednesday we see the point of Staalbjerghuk in Iceland, and estimate that we are about thirty miles distant from it.

On Thursday, June 7, we get into a tongue of open ice and see here and there seals, bladder-nose, upon the floes. There is life on board the 'Jason' at once. 'It is a good sign to see seal so soon, on the first ice we get into. We shall have a good season this year very likely, and we want it too, after all these bad years,' and so on. And visions of a real handsome catch, as in the good old Greenland days, arise in the lively imagination of many a sealer. The men are all deeply interested in the success of the vessel, as their earnings are dependent thereon. Hope too, luckily, has a tendency with

many folk to follow the direction of their wishes. Easily is it raised, but just as easily disappointed.

We saw more seal on the ice, and our captain determined to try for a little haul. So the boats of one watch were sent out. Sverdrup and Dietrichson, who had never been out before, were of course consumed with eagerness to see and try their rifles on these masses of game. They were no little delighted when they had received the due permission and the boats were under way, but as beginners they were put in charge of skilled shooters. We soon heard reports on various sides of us, but only a shot now and again—no lively firing, nothing like the continuous blaze and rattle all over the ice which is the accompaniment of a good haul. They were evidently youngsters and mainly small seal which lay scattered hereabout.

In the afternoon, when this detachment had come back, the boats of the other watch were sent out. I stayed on board the whole day, and shot a number of seal from the stern of the vessel. Curiously enough, one can, as a rule, get nearer to the seal with the larger vessel than with the boats. They have learned to fear the latter, and often take to the water quite out of range, while one can sometimes bring the big ship right up to the floe on which they lie before they decamp.

We got 187 seal altogether that day, which is nothing much. They were chiefly youngsters, though there were some old ones among them. Dietrichson's boat got twenty seal, and Sverdrup's thirty-six.

That day, too, we saw several sealers in the ice to the west of us, and next day we had a talk with some of them. Of course they all wanted to talk with the 'Jason,' which had this extraordinary Greenland expedition on board. The captain of the 'Magdalena,' of Tönsberg, came to see us and carried off the post we had brought from Iceland for the other vessels, promising to have it delivered, as the 'Jason' was bound for the east coast of Greenland, and it was uncertain whether we should see the other sealers for some time. The postal system of the Arctic sea is managed in a somewhat remarkable way. If any of the vessels touch at Iceland they carry off the post for the rest of the fleet. The reader will perhaps think that the Arctic sea covers a large area and that it would be doubtful whether one vessel would find the others in these parts. But it is not really so. The sealing grounds are not so extensive that one is not quite as well informed about one's fellow's actions and movements as one generally is about the business of one's neighbour in a small town at home. The sealers like to keep close together, and no one

will separate any distance from the rest for fear the others may come in for a haul while he is away. He dare not run the risk of getting nothing while the others are taking seal, on the mere chance of getting a larger haul all to himself another time. The struggle for existence is here maintained in the same way as elsewhere in the world.

Later in the afternoon we passed the 'Geysir' of Tönsberg. The captain came on board and had supper and a glass of grog with us. He was in such high spirits that none of us had the heart to tell him that he had lost three of his children from diphtheria since he sailed from home. Captain Jacobsen had been told it in a letter which he got in Iceland, but the father had heard nothing of it, nor did he learn it from us. One can thus live up here in the Arctic Sea without a suspicion of what is going on in the world. One's joys and sorrows are bound up in the seal and sealing, and the whole of Europe might well collapse without the knowledge or regard of this section of its population.

During the night, as we were making west along the ice, we passed the 'Morgenen,' one of Sven Foyn's ships. She was just coming out of the ice with the skins of three newly-shot polar bears in tow. Bear-skins are generally towed in this way for some time in order to clean them. Dietrichson and Sverdrup

were much provoked at this, for the dearest wish of their hearts was to see and get a shot at a bear.

We now keep a westerly course for a few days, but the wind is against us and we do not make as much progress as we had expected, especially as we go into all the larger inlets in the ice to look for seal, of which we see but few.

Of whales, on the other hand, we pass some number, and the smaller kind especially, the 'bottle-nose' or 'bottle-head' (*Hyperoodon diodon*), is not uncommon. They come five or six or often more in company, brushing close, as usual, to the vessel's sides, gambolling as they go at times, and at times lying quite still in front of her bows. Extraordinary creatures they are, with the soft, round hump of fat upon their foreheads, which they generally carry above the water. This feature is especially prominent in the male, dropping sharply off down to the long, narrow beak into which the jaws are prolonged, and which is scarcely ever seen above the water.

The 'bottle-nose' must be reckoned among the toothed whales, though it only has two small teeth loosely fixed in the extreme front of the under-jaw and often wanting in the case of old animals. Evidently these teeth are not of the slightest use to them.

They are only the last heirloom of their rapacious ancestors, who had a good equipment of sharp wedge-shaped teeth, like other dentiferous whales. An altered mode of life has meantime made teeth unnecessary; little by little they have disappeared, and now only two are left. In their embryonic state, however, they have the promise of a full complement of teeth bequeathed them by their forefathers. These whales no longer live on fish or other animals of size, like most of the toothed whales, but on jelly-fish and other small creatures which swarm at large in the sea and are swallowed wholesale, a process in which teeth play no part.

Of what little use to them are the two teeth which they still possess, I had a striking proof some years ago. I had sent to me, while I was at the Bergen Museum, a tooth from a 'bottle-nose,' the crown of which was completely and closely covered with long cirripeds, a whole colony of both old and young. Some of them were so big that they must have hung outside the whale's mouth. Had this tooth been in use, the parasites would not have been able to remain for a moment without being torn from their hold. The tooth is still preserved in the Bergen Museum.

Small observations like this, insignificant as they may seem, are yet of great interest to the naturalist.

They show him what little ground there is for the antiquated but so commonly accepted doctrine of the absolute appropriateness of everything in nature.

Sometimes, too, we came across the huge blue whale (*Balænoptera Sibbaldii*), the giant of the animal world. Far away in the distance one can see them coming, hear them blowing, and see the solid column of spray rising from their nostrils. They come nearer, and then, perhaps before one expects them, thrust up first a huge head with a sharp ridge running along the bridge of the nose, then a mighty back with a little fin far behind, out of the water right alongside the ship. Then they exhale their breath and a tremendous cloud of spray rises from the vent, and, just as when one turns the stopcock of an engine boiler, one actually feels the air vibrate. They look as large as the vessel one is standing upon. Then with a twist of the back they disappear again.

On Sunday, June 10, we have thick and foggy weather. For several days we have been unable to take an observation and cannot tell how far we have advanced, though the current, which is strong here, must have carried us far to the west at the same time that we have made a good deal of way south. We must have reached that point where, if there is

to be any prospect of getting to land at present, the edge of the ice should be taking a more westerly or north-westerly direction. Of this there is no sign; there are masses of ice extending in a south-westerly direction. This does not look at all hopeful. The real sealing season begins to get very near, and it may take the 'Jason' a long time to make her way to the north-east again against the current, especially as it has begun to blow from the east.

THE FIRST SIGHT OF GREENLAND ON JUNE 11

(*From a sketch by the Author*)

Meantime the other ships may be taking seal, and I had bound myself not to let my expedition interfere with the vessel's real business.

So that morning we came to the conclusion that we must give up all attempts to land for the present, and wait for a better chance. We turn eastwards for the ordinary sealing-grounds, but wind and

current are now in our teeth, and we have to beat up against them.

Next day it clears up and we get a sight of land, the first alluring sight of the east coast of Greenland. We see high, jagged mountain tops, evidently the country north of Cape Dan. We are not so far away as we expected, perhaps rather more than sixty miles.

We find a narrow inlet cutting deep into the ice in the direction of land. It seems to stretch far inwards, and we cannot see the end of it even from the masthead. We determine to try how far we can get, and it is possible that we may find seal there too. We have the wind in our favour and make our way in quickly. We soon find the way blocked, but a sealer does not lose heart at such trifles. We force a passage and the floes of ice have to give way before the stout bows of the 'Jason.' Then we get into a large open pool with no ice in sight between us and land. This looks promising. We take our latitude and longitude, and at noon find ourselves at 65° 18′ N. and 34° 10′ W. We are still some fifty miles from land, but our hopes begin slowly to rise as we think that we may perhaps after all be able to effect our landing without further waiting.

But after steaming inwards for another couple of hours at good speed we again sight ice from the

masthead right in front of us. We go a little way into it and see that it is packed so close that our vessel will find it difficult to force a passage through. We are now some forty miles from land, and, as the ice ahead is rather heavily packed and rough, it seems scarcely advisable to try and land now. It will be better to wait till later in the year when the ice will have diminished.

It certainly seems to us that the ice farther north is more open, and that we shall be able to get considerably nearer land that way, but, as I have said already, the 'Jason' is out sealing, and if she forces her way through up there she will run the risk of getting stuck and losing the best of the season. This risk is not to be thought of, so we make our way out again and say farewell to the east coast of Greenland for the present. The fog soon hides the land again from our sight.

Balto's description of his first sight of Greenland shows that the impression it made upon his mind was not altogether satisfactory. He writes:—'After sailing for some days in the direction of Greenland we at last came within sight of land, but it still lay far in the distance some sixty or seventy miles away beyond the ice. That part of the coast which we could now see had no beauty or charm to the eye, but was dismal and hideous to look upon. Mountain

peaks terrifically high rose like church-steeples into the clouds which hid their summits.'

Next day we have a good proof of the strength of the current in these seas. We have been beating up to the north-east the whole night long with a strong easterly breeze. Next day at noon we again see land in the same direction as on the day before, and, if possible, we are a little way still farther south. The current has been bearing us to the south-west all along.

The next few days we beat up to the north-east along the edge of the ice, but make little way, as the wind is strong against us and the current carries us back. As hitherto, we see a great deal of whale. They are chiefly the 'bottle-nose,' several of the larger species of whalebone whales, most of them probably the blue-whale, and most of them moving westwards, possibly towards Greenland. Whales have evidently their migrations, though we know little or nothing about them. Now and again we see one of the smaller kinds of whalebone whale, which our sealers sometimes called 'klapmyts'-whale, as they maintain that it is in the habit of frequenting the grounds where the 'klapmyts,' *i.e.* the bladder-nose seal, is caught. It seemed that it might possibly be the same species as that found on the coasts of Finmarken, where it is called the 'scie'-whale (*Balæno-*

ptera borealis). Once or twice, too, I saw the killer-whale (*Orca gladiator*), the little species so readily known by its prominent back-fin, on which account the Norwegian fishermen call it 'staurhynning' or 'staurhval.' It is an unusually powerful little whale, is active in its movements, and provided with a set of dangerous teeth. It is the terror of the big whales; when it appears they flee pell-mell, and one of these little gladiators alone is enough to put the giants of the sea to flight and even to drive them ashore before him. Nor is this terror the big whales have for their enemy all ungrounded, as he pursues them and attacks them from the side. The killer generally hunts in companies, the members of which rush straight in upon the whales and tear great pieces of blubber out of their side, whence their Norwegian name of 'spækhugger' or 'blubber-snapper.' In pain and despair the big whales lash the water and break away with the speed of lightning, but closely followed by these little monsters, who do not desist until their victims, exhausted by loss of blood and exertion, throw up the game. Not only the whale, but the seal too, is the victim of the killer's rapacity. The Eskimo have told me that they have seen this animal—'ardluk' as they call him—devour a seal in a single mouthful.

The killer of our coasts seems to some extent to

lead a more peaceful life. He is an habitual visitor at our herring-fisheries, and then seems to live on nothing but herring and coal-fish, among which, however, he causes a deal of panic and confusion. He seems to show no tendency to attack the great whales with whom he comes into contact daily on these occasions, nor do they seem to have any fear of him. The reason of this mutual relation is not quite certain. Possibly at these times the killer gets enough fish-food and feels no desire for whale-blubber, but it is also probable that the great whalebone whales which appear at the herring-fisheries, viz. the fin-whale (*Balænoptera musculus*), and the pike-whale (*Balænoptera rostrata*), are not the particular species which he is accustomed to attack. I am inclined to think that these two species are too quick for him, and that he therefore prefers the larger but less strong and speedy blue-whale, and possibly, too, the hump-backed whale (*Megaptera boops*).

Now and then we see seals asleep in the water. As they bob up and down with the waves they look like live ship-fenders floating on the surface. A few we see, too, on the scattered, drifting ice-floes. This probably means that there are more on the ice inside, but the air is thick and we have no time to look. We are impatient to see our fellows again; it may be that they are hard at work, while we should be here

poking about in the ice and very likely catching nothing, while they are in the thick of it. That would never do.

At last we got a little wind from the west, and a couple of days' sail brought us to the rest of the fleet again. There was a general sigh of relief on board the 'Jason' when it was known that the others had caught nothing since we left them.

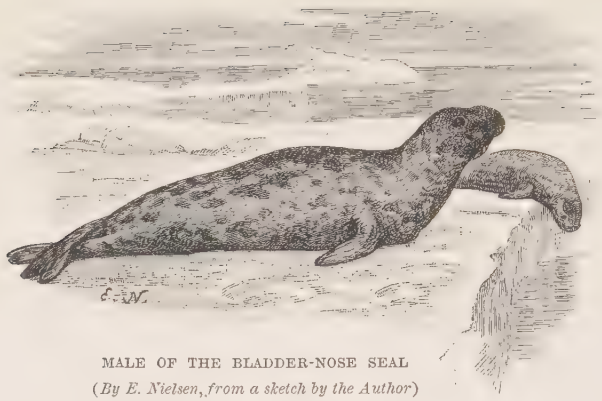
Day after day up till midsummer we now lay knocking about in fog and dirty weather at the edge of the ice, rolling in the swell, and never a seal did we come across.

At St. Hans' tide there would be a change, said the sailors, but St. Hans' Eve and St. Hans' Day came and went, and there was no change except that on the Eve we got some splendid St. Hans' porridge and real fine weather with good, Christian sunshine. This made existence much more of a pleasure. As long as we had the sun we could not complain, but never a seal was there to be seen, and this in itself is melancholy when one's lines are cast on board a sealer.

All the vessels in Denmark Strait are now here together, some fourteen or fifteen in number. The whole fleet sail one after the other in and out of the inlets, like a flock of sheep. If one of them sets off into an ice bay, the whole lot follow; if the first lies

to, to consider matters, they all come and do the same, and if one turns they all turn, and out they go in a string again. And these manœuvres are repeated day after day, week after week, but of seal, alas! we get none. This kind of thing gets worse than ever towards the end of the month, which ought to be the best part of the season. This year all parts seem about equally good or bad.

Some of my readers may like to have a fuller account of the life and movements of this particular seal, and of the methods of capture employed against it, and, as I have had more opportunity than most people of making observations in this direction, I will try in a separate chapter to shortly give as complete a description as my experience allows. There is still much, especially with regard to the migrations of this seal, which is obscure and needs further investigation.



MALE OF THE BLADDER-NOSE SEAL
(*By E. Nielsen, from a sketch by the Author*)

CHAPTER VI

THE BLADDER-NOSE SEAL AND ITS CAPTURE

The bladder-nose, the 'klapmyts' of the Norwegians and *Cystophora cristata* of naturalists, has its nearest connexions among seal-kind in the sea-elephants of western North America and the Antarctic Ocean, one point of resemblance being the hood which the male bears upon its nose, a feature which makes it strikingly distinct from all other Arctic seals. It often attains considerable size, and next to the blue seal (*Phoca barbata*) is the largest of the seals found in Arctic waters from Greenland to Spitzbergen. It takes to the water immediately after birth, when it carries a coat of smooth hair, light or nearly white below, and grey on the back. At the first change this becomes

somewhat spotted, and gradually as the young seal grows it becomes more and more dappled, till at maturity the coat has a greyish-white ground with numerous black spots, large and small, irregularly distributed over the whole body. These spots are smallest upon the head, but they are here so closely set that the effect is often that of a continuous black.

As I have already said, the male seal has a kind of hood or bladder on its nose, which can be blown out to a size which is quite astonishing, and then gives the head a most extraordinary appearance. But it is seldom that this is done, and I have only seen it when the animal is excited or irritated, as for instance by being shot at. At ordinary times the hood is folded and generally hangs over the end of the nose like a short proboscis.

It is not easy to see what purpose the hood serves. It would seem to act as a protection to the nose, that being the most sensitive part of the animal, and to owe its gradual development to the struggles of the males for the possession of the females, the individuals best protected in this way having as a rule survived the contests and subsequently reproduced their kind. Robert Brown is of the opinion that the female of this species also has a hood,[1] but

[1] 'Arctic Manual and Instructions,' London, 1875.—'Natural History,' p. 64.

this is a mistake, as she has no bladder which can be distended at all, though the skin over her nose is certainly somewhat loose and baggy. I do not feel by any means convinced that this explanation of the origin of the hood is the right one. The male seals certainly have violent struggles for supremacy in the breeding season, but I do not see why the

FEMALE AND YOUNG OF THE BLADDER-NOSE SEAL
(*By E. Nielsen from sketches by the Author*)

nose should be especially exposed on these occasions. It is possible that the excrescence is a personal adornment to which the males have gradually attained, and that those individuals which are best furnished in this respect find most favour with the females. But the taste which has led to such a result is no doubt somewhat surprising.

The bladder-nose is, as I have said, a large seal,

and possesses unusual strength. He is courageous too, and when he defends himself, as often happens, he is an opponent not to be trifled with. On the ice he can take very good care of himself, and in the water he is actually dangerous, and the Eskimo, who have to capture him from their little 'kayaks,' or canoes of skin, have naturally a great respect for him, as he has been the cause of more than one death among them. Sometimes even these seals assume the offensive, as I found once in 1882, when my boat was attacked by a male bladder-nose, who threw himself over the gunwale and struck at me with his teeth. He missed me, but caught the wood-work, on which he left deep marks.

This seal is an excellent swimmer and diver too, and to obtain its food, which consists chiefly of fish, it sometimes descends to extraordinary depths. How deep it will go is not known, but some idea may be formed from the fact that I once found between Spitzbergen and Jan Mayen some of the peculiar Norwegian red fish, the 'bergylt' (*Sebastes norvegicus*), in the stomach of a bladder-nose. This is quite a deep-sea fish, its habitat ranging from sixty to ninety fathoms below the surface. If the pressure at this depth, which amounts at least to eleven atmospheres, be realised, it will be seen that this seal must possess a chest of considerable strength. As another proof of

its immense power I may mention that it can jump out of the water on to a floe the edge of which lies as much as six feet above the surface. I have often seen them shoot suddenly out of the sea, describe a curve in the air, and plump down some way inside the edge of an ice-floe which was quite as high above the water as I have said. The impetus necessary for this purpose implies an amount of power which the observer is scarcely likely to realise at first.

The bladder-nose is almost entirely a seal of the open sea. It does not keep much to the coasts, but follows the drifting floes in its migrations, and occurs all over the Arctic Ocean and the northern Atlantic, from Spitzbergen to Labrador and Baffin's Bay. It is not quite certain whether it goes further west, but it is not likely to do so to any great extent. Its easterly limits seem to be the neighbourhood of Spitzbergen, for it is not found off Nova Zembla.

It is sociable in its habits, and in smaller and larger herds undertakes periodical migrations several times a year. On the west coast of Greenland, where the Eskimo regularly hunt it, it is known to disappear twice and reappear twice at fixed seasons every year, but where it goes while it is away is still uncertain. I consider it probable that the first time it disappears, in the winter or early spring, it goes in

search of drift-ice which lies at a great distance from the coast, the Greenland bladder-nose, for instance, retiring in the direction of Labrador, where they are taken in great numbers during the spring. Here they can bring forth their young in peace and quiet, the time of birth being about the end of March, and then towards the close of April or the beginning of May they appear on the coast of Greenland again. When they disappear for the second time, in June or July, it is again the drift-ice to which they resort. This is the season at which they change their coats, and during the process they do not readily take to the water. As a rule they lie basking and lounging about on the floes, where one may often see great heaps of the hair they have left behind them. At this time they eat very little, and towards the end of July they are very thin, in which condition they still are when they appear a second time on the Greenland coast in the month of August.

The tract which this seal chiefly frequents is, beyond comparison, the stretch of sea which lies between Iceland and Greenland. Here during the moulting-season they gather in enormous numbers, and here it is that the Norwegian sealers get their best hauls.

The bladder-nose season generally begins in June, at which time the sealers arrive in Denmark Strait

after their season with the saddleback- or harp-seal (*Phoca Greenlandica*), which is taken in the neighbourhood of Jan Mayen. Even before this some of them have also been engaged in the capture of the bottle-nose whale (*Hyperoodon diodon*) off the north-east of Iceland.

The first thing, of course, is to find the seal, and this is often a difficult task, for it must not be supposed that they are at all generally distributed over the ice. The sealers often have to search for weeks, skirting the edge of the ice-fields and examining every bay or inlet which admits of a passage in. The glasses are in constant use in the crow's-nest on the main-top. Then, if after long search signs of seal are at last discovered far away among the floes, and the ice does not lie too close to make a passage possible, the engines are at once put to their highest speed. The one object is now to push in and anticipate one's competitors. Just as at the card-table there is no fellowship, so among the sealers of the Arctic seas altruism is a virtue unknown. Every ship does its best to outwit its fellows, and nothing brings so much satisfaction as the success of an ingenious trick. So, if there happen to be several vessels in one's neighbourhood when one discovers seal, and there is reason to believe that the others are still in ignorance of the find, the first thing is to

entice the others away and set off in pursuit alone. To gain this object recourse is had to the most extraordinary stratagems. To steam off at full speed in quite a different direction, as if one already saw or expected to see seal in that quarter, so draw the others off, and then a while afterwards sneak back and start off to make one's capture alone, is an artifice in daily use at these times.

When the vessel is then being driven with all the speed she can bear onwards among the floes, and the crew begin to suspect that seal have been sighted from the look-out, there is soon life on board. The men gather in the bows and along the ship's side to get the first sight of their prey from the deck, and then all hands are set to work to get the boats ready and to see whether the bread and bacon lockers and beer-cask are properly supplied, whether there are cartridges enough in the box, and the rifles are all clean and in good order. Every detail is now seen to, and if there is nothing else to be done the skinning-knives have their last edge put on, that they may do their work well upon all the seal in prospect. Then up the men go on deck again to have another look ahead, following the direction of the long glass up in the crow's-nest above. Then, when one seal at last appears, they talk and gesticulate, and as more and more come gradually into sight,

scattered like black dots among the floes, the excitement increases, and the men gather together into groups and eagerly discuss the probabilities of a real haul. Though they despondently prophesy failure and disappointment again, still every new seal that is seen is greeted with a fresh cry of welcome.

Meanwhile the ship pushes slowly and steadily on, and the captain shouts his orders from above with now and again an oath or execration directed at the two poor wretches who are standing at the wheel and striving their utmost to do what they are told with promptitude and care. The curses, indeed, pass in at one ear and out at the other as they stand there working, till the sweat runs off them, while the ship, amid noise and crashing, labours from floe to floe and at each shock trembles in every joint, sometimes so violently that it is no easy matter to keep one's footing upon the deck. All the time the engines are pushed to the utmost and the screw leaves its swirling eddies, which are soon obliterated by the ice. The captain sits in the crow's-nest and feasts his eyes on the crowds of seal ahead, laying his plan of campaign the while and directing the vessel's course. It is an exciting time, this approaching of the seal, and expectation and anxiety prevail throughout the ship.

Then, when at last the order to get ready comes,

there is a shriek of joy from one end of the vessel to the other. In the forecastle the confusion is at its highest; no more sleep is allowed, the men get into their sealing-clothes, and a good meal is prepared on the crackling stove to give the boats' crews heart for their work. By this time, perhaps after several hours' steam through the ice, the ship is well among the seal, which are to be seen lying on all sides about the floes. But she still pushes on, till she is in the very midst of them, and the final order for the start is given. At once all hands drop into the boats, which are hanging clear in their davits over both sides of the ship. Then the shooters—there is only one in each boat's crew, and he takes command—receive their orders from the captain, and the boats are lowered away. The ship has meanwhile slackened speed, and all life is transferred to the boats. Quickly they drop into the water and bear away, each in its own direction. It is a fine sight to see a sealer's ten boats thus get under way. The shooter stands up in the bows with his eye fixed on his seal. The coxswain stands in the stern at his post, and the other three or four men of the crew bend eagerly to their oars; all is excitement and expectation, more intense than before.

When the seal are actually reached the fusillade begins, often with all the liveliness of a hot brush

between skirmishing parties. If the day be fine and sunny, and there are plenty of seal around, lying basking lazily upon the floes, there is a fascination about the scene which will never cease to charm the mind of one who has been present at it.

The main object of the shooter is, of course, to be the first back to the ship with a load of seal, and he tries to excite his men to the same ambition and urges them to their best efforts. The mode of approach is interesting. It is no use stalking the seal or drawing warily near under shelter of the floes, for this method is nearly certain to make them take to the water. On the contrary, one must avoid bringing one's boat behind a piece of ice which will conceal it from view, after the seal have once caught sight of it. It must be taken along in as open water as can be found, and as directly as may be in the face of the seal which are to be first approached. They ought to be able to see the boat, if possible, from the very first, for if they are taken at all by surprise they disappear at once.

As a seal catches sight of a boat in the distance he generally raises his head, but if it is not near enough to alarm him he will very likely lie down at his ease again. Then, as the boat comes nearer, he lifts his head again, shows a certain amount of uneasiness, and looks first up at the strange object and

then down at the water below him. The boat is brought still closer, the oarsmen rowing with all their power; the seal grows restless, drags himself still further out towards the edge of the floe, and gazes in his uncertainty at the boat and the water alternately. Now that he gives unmistakable signs of disappearing, the boat's crew at their captain's order set up a series of most terrific yells. The seal is at first petrified with astonishment at this strange phenomenon, but he soon recovers and drags himself still nearer to the edge. More yells, still more unearthly and longer sustained than the first, stop him once more, and he stretches out his neck listening intently and staring in wonderment at the boat, which is all the while pressing in nearer and nearer to him. But now he bends over the edge of the floe, stoops down, and stretches his neck towards the water in spite of repeated yelling from the boat. He has now made up his mind to go, and if the boat is not yet within range the only thing the shooter can do is to raise his rifle quickly and put a ball into the side of the floe just below his head, scattering the snow and ice in a shower over his chest and face. This is a new danger, and in terror he draws back again and drags himself on to the floe, gazing intently at the edge, where evidently a malicious and unseen enemy lurks close at hand. While the seal is still

pondering upon this new mystery, the boat has been brought by its vigorous oarsmen well into range. At the words 'Well rowed!' the oars are shipped and the boat glides on, the crew sitting still as the shooter raises his rifle, at the report of which the seal, shot in the forehead, lays his head down upon the ice for the last time.

SHOOTING BLADDER-NOSE.—'THE OTHERS LIE QUIETLY GAZING AT THEIR DEAD COMRADES. . . .'

(*By E. Nielsen, from a sketch by the Author*)

If there are more seal on the same floe or the surrounding ice, a large number may be shot then and there. But the chief point is to hit the first ones so as to kill them on the instant. If this is done one can proceed at one's leisure, and if there are really many seal about one can make a good haul straight away. When I was out in 1882 I remember shooting

my whole boat's load on the same spot, and I could have multiplied the number again and again if I had been able to go on shooting. For when one is once well in among the seal, and has the dead bodies of those one has shot lying round one on all sides, the others lie quietly gazing at their dead comrades, whom they take still to be alive. They evidently think that, if these can lie there so quietly while the enemy is in their midst, there can be no reason for them to move. On the other hand, if the shooter is unlucky enough not to hit the first seal or seals in an immediately fatal spot such as the head, so that any of them begin to jump about the floe in their pain, or fall splashing into the water, it is pretty certain that the rest will take alarm and disappear too. For this reason it is much better to shoot wide altogether than to wound a seal, and it will easily be understood how important it is for a sealing-boat to be in charge of a really good shot.

As soon as the seal are shot they are skinned, and if there are several on the same floe the whole crew disembark and set to work. The great thing is to get them all done with the least possible delay, lest the other boats should get a chance of pushing on before. The object of every shooter is therefore to get quick and clever skinners among his crew.

A good skinner will get through his work in an incredibly short space of time, and I have often seen

the whole process completed in a couple of minutes. First comes a long slit down the front from head to tail, and a few cuts on each side to separate the layer of blubber from the flesh; then, with a few more gashes by the head and hind-limbs, the whole skin is drawn off; the fore-limbs are then cut away, and the process is complete. Only the skin and the thick layer of blubber which lies between it and the flesh are taken, the rest being left on the ice as food for the sea-birds.

The capture of the bladder-nose in Denmark Strait is not an industry of very long standing. It was inaugurated by the Norwegians in 1876, and their example was followed by a few English and American vessels. For the first eight years the venture was an unprecedented success: the seal were more than plentiful, and were shot down in thousands. During this period something like 500,000 head were captured, and it is probable that quite as many were killed and lost. After these years of plenty came a change, and ever since the pursuit has been practically a failure, all the vessels alike being equally unsuccessful.

The reason of this change has puzzled the brain of many a sealer. He looks to unfavourable conditions of wind, sea, and ice, but in none of these can he find consolation or encouragement to hope for better things in the future. It might be the case

SEAL-SKINNING ON THE FLOES

(By E. Werenskiold, from a photograph)

that the conditions were unfavourable for a year or two, but the ill success of summer after summer for a period of four or five years can scarcely be explained in this way. For instance, as regards the ice, I can testify from my own experience that the 'Jason' made her way several times into ground which would undoubtedly have been called good when I was out in 1882, but on these latter occasions we found no seal. When we did find them they lay always farther in, where the ice was packed closest, and whenever it happened to open they invariably moved off, and always again farther inwards.

The question now arises whether the bladder-nose still exists in its original multitudes. All who look upon the subject impartially must at once acknowledge it as obvious that there has been a considerable decrease in the numbers of the seal owing to the simple butchery to which they have been exposed. To me, who have had opportunities of visiting the sealing-grounds in two different periods, the difference between past and present was very striking. Here, on the very same ground where in 1882 I saw seal on all sides as soon as we had pushed a little way into the ice, and where I helped to shoot them down by thousands, there was now scarcely a sign of life to be seen. That there is a decrease in their numbers is certain, but I was no

doubt inclined at first to consider this decrease greater than it really was, and to attribute to it alone the failure of the industry in recent years.

On July 3, 1888, I was induced to modify my opinion on this point. We had penetrated, as my narrative will subsequently show, a long way into the ice, and came within sight of seal in numbers quite as great as anything I had seen before. But they lay where the floes were packed closest, and we could not get within reach of them. Here they were, then, in all their numbers, on ice which we should never have searched in earlier years, because there were always enough and to spare on the outer floes, where they are now as good as extinct. As soon as I saw this unexpected abundance I was obliged to admit that the decrease could not be so great as I had hitherto supposed.

The failure of the sealers must, therefore, allow of some other explanation. The conclusion I have gradually come to is that, while the decrease of the numbers of the seal owing to excessive slaughter is a factor of no little importance, there is, nevertheless, another which has at least an equal bearing upon the result. This contributive cause seems to be the alteration of the seal's habits and way of life, which may be due both to actual education and experience, and to the imperious laws of the ordinary struggle for existence.

Many people seem to think that animals cannot develop their own faculties, and have no power of making observations, or of drawing conclusions from their own experience. I am not one of these people, and I believe that animals, wild as well as tame, have eyes to see with, ears to hear with, and understanding of the same kind as we men, if not in so high a degree. And the bladder-nose of Denmark Strait may perhaps be taken as a good instance of this. In earlier days this seal had a glorious time of it up here on his fields of ice. He ate, slept, had his love-passages, reproduced his kind, and, in short, enjoyed himself, and multiplied exceedingly. The old males had their internecine struggles indeed, and fought desperately for the females, but this is a state of things common upon the face of the earth, and it serves besides to make life more lively. Only one enemy had the bladder-nose in this his golden age, and this was the polar bear. But it was not often the bear troubled them, for, as he is not much of a swimmer, he prefers to keep to the closely packed ice well inside, while the seal in those days, for that very reason, frequented the outer floes. But in the year 1876 a polar bear of another kind, bigger and more voracious than the seals' familiar foe, paid its first visit to Denmark Strait. This was the Norwegian sealing-vessel 'Isbjörnen,' or the 'Polar Bear,' which

was sent to these parts by Sven Foyn, the veteran among the sealers of Norway. The 'Isbjörn' found heaps of seal, and carried off with her several thousand skins. The life of peace which the bladder-nose

THE ONE ENEMY OF THE BLADDER-NOSE IN THE GOOD OLD DAYS

(*By E. Nielsen*)

had hitherto enjoyed was now a thing of the past. Every summer, at the end of May or beginning of June, fleets of Norwegian sealers found their way hither, and, as their victims were tame and unsus-

pecting, great numbers were secured. So tame and confiding were they, indeed, the first few years that it was not necessary to shoot them. They were simply knocked upon the head where they lay, and some captains did not even allow their men to take rifles out in the boats with them. This period of bliss for the sealers was not, however, of long duration. The bladder-nose had not yet learnt the danger threatened by these vessels with their crow's-nests on the main-top and swarms of boats. But his experience soon taught him, and it was not long before he grew shyer. He would no longer let the boats come close in before he took to the water. The rifle had now to be used, often at long ranges, and even so it was not easy to fill one's boats. The most remarkable thing was that it was not only the old seal that grew shy, but the youngest animals were now astonishingly wary. The parents must have imparted their experience to the offspring, or the same result must have been brought about by heredity, though this seems scarcely likely to have happened in so short a time. Whichever be the true reason, the fact remains that these seal have grown shyer year by year, or, in other words, have learnt to protect themselves from an enemy hitherto unknown, and what is more, they have learnt this lesson in the short space of a decade. But I believe myself that the bladder-nose has learnt even more

than this: that he has discovered that it is among the outer floes, where before he was safest, that danger now awaits him. He has found that if he wants to be undisturbed in the moulting-season, when he likes to be at his ease upon the floes, he must resort to the closely-packed ice inside. Here, indeed, he exposes himself to the ravages of the bear, but he avoids a far worse enemy, the Norwegian sealer.

Plausible as this theory seems, it must be admitted that there are also other ways of explaining this change of habit. If it be granted that in the beginning all individual seals are not equally shy, a fact which can scarcely be disputed, then the deduction readily follows that in the first years of the pursuit the least shy among both young and old will be the first to fall victims, while the warier will escape and continue to reproduce their kind. If this went on for a series of years we may suppose that, even if the individual seal learnt nothing from experience, still the general average of shyness would be much intensified by the mere weeding out of the lazier and less cautious among the flock. And so by the interbreeding of these shyer animals the quality of wariness must gradually become fixed in the species and intensified by selection as time goes on.

Though this explains the growing shyness of the

seal, it does not account for its new tendency to seek the inner ice. But, just as one may take it for granted that originally, when the pursuit began, there were degrees of shyness manifested in the seal, so we may suppose that there were also at that time individuals which preferred the outer, more open ice, and others which were accustomed to frequent the inner floes. Of course the first of these would be most exposed to the onslaught of the sealers, and they would be gradually killed off, and thus the tendency to retire farther and farther inwards would, like the quality of shyness, become gradually established in the species.

It is not easy to decide which of these two modes of explanation will best account for the phenomena we have just discussed. Probably both may hold good, each in its degree, and we may be allowed the conclusion that it is partly education and experience, and partly natural selection, resulting in the survival of the fittest, which have brought it about that the seal of Denmark Strait have acquired a warier disposition and altered their habits since the days when their capture was first attempted. In any case this seal is a remarkable example of the short time necessary for the alteration of an animal's manner of life and character.

FORCING OUR WAY THROUGH THE ICE

(By Th. Holmboe, from an instantaneous photograph)

CHAPTER VII

LIFE ON THE 'JASON'

After this long excursion I must return to our friends on board the 'Jason' and see how they have spent the time.

As I have already said, we get very little seal and have not much to do in that way. There are enough, however, to give us a pleasant change in the way of sport, and while we drifted about in the ice we managed to have a very agreeable time on board.

The pecuniary result of the season and future prospects in respect of the Arctic Sea were not of much concern to us. With the exception of now and then a day when our rifles did not carry as straight as they might have done, we had not many dark clouds on the horizon of our lives.

To most of my companions this life is new. There is much to see and observe on the ice and in the sea, and to a sportsman there is no lack of diversion. If there are no seal to stalk, one can go out and shoot auk. Of them there are plenty, and it takes no great time to make a bag of several score.

It may be said that auk-shooting is not sport, but to lie in a boat off the edge of the ice and shoot the birds as they pass overhead is sufficiently amusing and not so very simple a business either, for at least I have at times seen them missed. And, if one cares to shoot them in the water, there again they provide a certain amount of entertainment.

But to my mind the first of all our sports up here is the seal-shooting. It is excellent practice and tends in a remarkable degree to make one a cool and steady rifle-shot. Certainly the range is not great, being some seventy to a hundred yards as a rule, but neither is the mark large at which one shoots. For the thing is to hit the seal only in the head, or at worst in the neck. To hit him elsewhere is worse

than missing him clean, as if shot in the body he takes to the water at once. Sometimes when the seal are shy the distances may be considerable, and when it is also taken into account that one has to shoot from a boat in motion, and that the light on the glittering, snow-clad ice is extremely trying, the reader will readily understand that it takes a good deal to make a good seal-shot. And, in fact, such folk are very rare. I have seen men who were excellent shots with a rifle if a fixed object were in question nevertheless shoot simply all over the place when they tried their hands at seal. Nor is seal-shooting lacking in variety, and if one is lucky enough to be put in charge of a boat as shooter, and happens to be out on a good day, the moments thus spent amid the ice in the little vessel, of which as shooter one is lord and master, may well be reckoned among the happiest in life. One is placed in the most glorious environment of ice, sky, and sea. The seal lie on the ice-floes around, and the sight of them causes to move at a quicker pace that hunter-blood which I believe all of us who are not over-civilised possess, and sometimes perhaps without our knowledge, from the day of our birth and onwards. The sight grows keener, all the powers are as it were concentrated in the eye and in the arms that raise the rifle or wield the oar, and the mind is filled with one

thought, and but one: to capture the seal, to bring one's boat through the ice, and to secure the greatest possible number of the prey.

It may be the spirit of the savage that comes forth in us at such times, the heritage from our

NAVIGATION IN THE ICE—'HARD A-STARBOARD'
(*By the author, from a photograph*)

nomad ancestors who lived on their fish and game. But, whatever it may be, one thing is certain: that such a life is free and glorious and gives strength alike to mind and body.

But when there is no shooting to be had, and gazing upon heaven, ice, and sea has at length grown

wearisome, we must look about us for some other amusement. For, however beautiful it all may be, and however much may have been instilled into you from the days of your childhood concerning the grandeur of the sea, the mighty, rolling, ever-changing ocean, there is nevertheless no manner of doubt that when you have stood and stared at it for weeks, or may be months, you are brought at last to the discovery that there is something monotonous in it all the same, and you sigh for change, or at least for something which would make the plane of the horizon a little less horizontal. But nothing of the kind came to us, and we therefore had to set to work to find ourselves diversion.

One of our chief amusements, and one which always provided a deal of fun, was throwing with the lasso. Of the boatswain we would borrow from twenty to twenty-five yards of good pliant rope. At one end we made a noose, and our lasso was ready for its work. The Lapps were, of course, masters in its use, as they employ it daily in the capture of their reindeer, and it was of them we learned the art. Old Ravna particularly was supreme. It was a fine sight to see him with his confident look, with no doubt that he would hit his mark, coil up his line in his right hand. Then, with his head bent slightly forward, his eyes fixed steadily on the

victim he had chosen, he would take a couple of steps, light and agile as a cat's, along the deck, and with a movement of the bent arm the line flew out with the speed of lightning and fell unerringly upon the head of the prey, who struggled in vain to free himself from the entangling coils.

Balto, being a settled Lapp, was, of course, less practised in the use of the lasso, but this his pride would not suffer him to admit. So it was one of our commonest diversions to take the lasso from him with some depreciatory remark, and when it did happen that we really beat him his air of astonishment and annoyance was something quite inestimable.

We went in for many games too, and trials of strength with fingers, hands, and arms. One game, called 'blockhead,' was played very keenly. Some figures of various shapes and some squares were chalked upon the deck, and the latter were given different values. Then from a fixed point we had to throw into the squares with flat discs of lead, without pitching them on to the figures, which are called the 'blockhead,' for by touching them one lost all the points which had been gained elsewhere. In fine weather, and when there was not too much sea, several games would be seen going on at once at different quarters of the deck, the usual stakes consisting of tobacco-screws.

When this diversion failed to satisfy we had to retire into the cabin and take to cards, and, though several of us were no card-players by habit, we would sit and play through the afternoon and late into the night, or, as it sometimes happened, even in the morning too. Our games were chiefly whist, together with our native pastimes: 'dundrabas,' 'spröite,' and 'klöverknægt.' We had only one pack of cards, and at the end of the voyage these were so unclean that it was a matter of difficulty to decide which was the more important constituent, dirt or paper. If, as we generally did, we sat up till midnight, we often found that we wanted something within us when the watch was changed. This would be either coffee or 'dænge' as we called it, *i.e.* bread fried in butter and sugar, and a very popular dish.

At this time the men would get coffee too, and every single night we enjoyed the charming sight of Balto coming, steeped in sleep and clad in the most shadowy attire, up the ladder from his cabin to make his way forward to the men and get his cup of midnight coffee. As a Lapp he was so fond of coffee that he could not let such an opportunity of enjoying the glorious drink slip by unutilised, even if he had retired to his sleeping-place hours before.

We had very little to read on board. I had not reckoned on so long a stay, and had not got a library

together, though, thanks to a friend of the expedition, Herr Cammermeyer of Christiania, we were provided with a certain number of books. These, however, were soon devoured, and there arose an intellectual famine on board which we felt really keenly. We hunted up everything we could, and even the most rubbishy pirate stories and Indian tales that we could find among the men in the forecastle were swallowed with the greatest avidity. Sometimes we went foraging on board the other vessels to see what we could lay hands on, but our booty was generally of a miserable description.

It was a great change for us when we were invited out to the other ships or when their captains came to pay us visits. It was a curious scene and one quite suggestive of summer to see these Arctic voyagers grouped in the sunshine about the deck, drinking their wine or coffee, smoking their cigars and pipes, and gazing out at the sea or the white ice-floes which lay quivering in the sunlight, while the time passed pleasantly amid jest and laughter. Sometimes, too, they would try their shooting skill on the floating lumps of ice, and many a good shot was brought off on these occasions.

The only one of us who seems not to have got on really well on board was our old friend Ravna, the elder of the Lapps. For him, wont as he had

been to wander with his herd of reindeer over the mountain wastes of Finmarken, life on board a cramped and rolling vessel seems to have had no attractions, and still less so because, as I fancy, he never got really used to the motion of the ship. He was always longing to feel land under his feet once more, which, as we then hoped, he was about to do ere long. Our other Lapp, Balto, seems on the contrary to have found life at sea suit him extremely well. His bright and cheerful mind, always ready to produce some piece of mischief, made him the favourite of the whole crew. Luckily his right knee, which had been disabled by the accident during our ascent of Glámujökull in Iceland, was now completely well.

I will give one of his many practical jokes as a specimen. One day when standing on the deck, surrounded as usual by a throng of friends, he suddenly pulled a stalk of grass out of one of his 'komager' or deerskin boots and declared that with it he would raise from the deck on to his feet anyone who would lie down and take the end of it in his teeth. The bystanders wondered and pronounced it impossible, for, if the stalk would hold, the teeth would not, but Balto stood his ground and said that if anyone was willing to try he would prove his statement. At last one of the men offered himself on the understanding that his teeth should not be

hurt. This Balto promised, and the performance was to take place with all the crew round looking on. Meantime Balto asked them to excuse him a moment, as he had some preparations to make, saying that he would be back immediately. Then, unknown to us, he sneaked down into the smithy and filled the hand which held the stalk with ashes. Then he comes up on deck again with the stalk in his hand as before, places the man on his back on the deck, stoops over him, and holds the stalk above his mouth. The fellow opens his lips to receive the stalk, while Balto opens his hand and fills his victim's mouth with ashes. Up flies the man on to his feet, coughing and spitting like one possessed, and greeted with shouts of laughter from the bystanders. Balto was fertile in notions of this kind.

The horse we had brought with us from Iceland was the pet of the whole ship. Everyone wanted to look after him and give him his food. This, however, led to the extremely unpleasant result that, in spite of the strictest injunctions, more was used than we could afford, and one day I discovered that the hay was nearly out. From henceforth our pony was the cause of constant anxiety. We had to pinch and scrape in every way, and our inventive faculties were tried to the utmost in our endeavours to find new sorts of fodder. We gave him raw seal's flesh, which

he ate for a time and then refused. We dried the flesh and gave it him, with the same result. Auk, too, he took for a while, and then we collected seaweed, masses of which were floating round us, and one kind of which he was especially fond of. In this way we kept him going for a long time, and he seemed to thrive pretty well and became an excellent sailor.

The ninth of July, however, was a day of mourning for the expedition, for we had nothing more to give our pony that he would eat, and he had to be shot. So fond had we grown of him that it was quite like losing a friend. The only service he did us was to give us a supply of good, well-flavoured beef, and one of his haunches accompanied us into the boats when we left the ship for land.

A good proof of the purity of the air in these parts is the fact that meat can be kept in the rigging a long time without going bad. Here there are no 'bacilli,' and consequently no putrefaction can take place unless it come from the dirt of the ship itself which we have brought with us from home.

The prejudices which people show against certain kinds of food are often almost ridiculous. I had some good examples of this at this time. After our pony had been shot and cut up in obedience to all the canons of the butcher's art, 'Yank,' as he was

called on board, an American settler, came up to me and asked for some of the meat. I gave him as much as he liked, and he was highly delighted. He cut some small slices at once and ate them raw, and the consternation and disgust to which this innocent and natural action gave rise were extremely comical. As there was much more of the meat than the expedition could make use of, I offered some to the men, but not a single one of them would have it, because it was horseflesh. They declared they would rather eat their unwholesome salt food, though it caused every other one among them indigestion. Afterwards, however, one of them came to me and asked whether he might have as much of the meat as there was to spare, as he wanted to salt it down. I was much gratified to find even one sensible man who was not a victim to these unhappy prejudices, and I asked him if he would not like to have some which he could eat fresh, as it was so much better so. He answered that possibly I was right, but that I must not think that he was going to use such stuff for human food, for it was for the pigs at home that he wanted it.

One is almost driven to despair sometimes when one sees how foolish and pig-headed people can be. Here are these sailors eating salt food and complaining of pains in the chest, as they call them, which only

mean heartburn and indigestion, due to an unwholesome diet, while they almost daily leave behind them on the ice heaps of fine fresh seal's-flesh, such masses as would gladden the hearts of Europeans as well as Eskimo on the coasts of Greenland. But to get these people to eat it is out of the question; no, rather will they die of starvation than eat such 'unclean' food. I shall not soon forget their consternation one day when I collected the blood of a freshly killed seal, and got the steward to make a pudding of it. It was very difficult to get any of them to taste it. Those who did were obliged to allow that it was excellent, and yet none of them could bring themselves to eat it, because it was seal's blood. For this very reason some of the members of the expedition used to eat all the more of such things, and one of them one day, after he had had his usual supper, which should have been enough for him, consumed no less than eighteen blood-pancakes. Here at least we had no prejudice to deal with. But otherwise it is quite remarkable how prejudices have found their way into all the relations of life, in great things as well as small, and corrupted them.

In one way I had more to do on board than I really cared about, and that was in the office of doctor. The reason of this was the unfortunate circumstance that I bore the title of doctor, since to

the generality of such folk one kind of doctor is just the same as another. And now they all turned up ill to a man, seeing that they had a doctor so handy, and it was not only among the sixty-four men of the 'Jason's' crew that I found my patients, but they swarmed on board us from all the other vessels to ask the doctor's advice as to what was the matter with them. To try and make these people comprehend that all doctors will not serve the same purpose would have been worse than useless. Doctor I was, and doctor I must be, and if I would not doctor them it was nothing but perversity. There was nothing to be done but to put a good face on the matter, and the healing art has suffered the admixture of so much humbug at all times that I felt that I could not injure its prestige seriously if I did practise a little imposture myself. And besides, it is often said, and no doubt with truth, that the most important influence a doctor has on his patients is through the confidence with which his personality inspires them. In this case there seemed to be no lack of confidence; the only thing was to make use of it, to assume a grave and important air, and let the rest take care of itself.

Some specimens of the consultations I had regularly to go through will perhaps interest my readers.

The commonest thing was that a man would

come to me with his hand on his stomach, complaining of pain in the chest. Did he not feel a sort of heaviness in the head too? I would ask. Oh yes, he was not sure that he did not. Was not his digestion sluggish, and did not he suffer from constipation too at times? Oh yes, he certainly thought he did. In these cases I would tell them that their indisposition was due to their way of life on board. They were much too lazy and ate too much altogether, especially of salt food, while the way they fried everything, in quantities of butter and grease, was not at all good for them. They must put a stop to all that, eat less, and eat fresh meat when they could get it, such as seal's-flesh—I knew, of course, that they would never do so—move about more in the fresh air up on deck and get a little exercise, and not sit all day idly on a chest in the stuffy fore-cabin. If this did not make them better they might come again, and I would give them a dose of Epsom salts or castor oil. I never heard any more of them, as they did not seem to care for the last proposition.

Others used to come and complain of bad heads and attacks of melancholy. I used to inquire as to the state of their stomachs, and whether they were subject to constipation. They generally owned to imperfect digestion, and I used to say the case was clear enough: too lazy a life and too much to eat.

More work and less food was what they wanted, and I would give them the same advice as the others. Sometimes, too, a little abdominal 'massage' was recommended, and as I gave this counsel gravely, I used to picture to myself the sight of these fellows lying in their bunks and rubbing their own stomachs.

One day a man belonging to one of the other vessels came on board with no little difficulty. He had a red complexion, as consumptive patients often have, and a hectic flush on his cheeks. He complained of bad lungs, and it was clearly a bad case of decline. He was of course incurable, and I could do nothing for him. The only thing I could recommend him to do was to keep himself fat; he might eat blubber and drink oil, but that was all the consolation I could give him. He had been drinking oil lately, but it was 'bottle-nose' and did not seem quite to suit him. Poor fellow! bottle-nose oil has a very powerful effect internally and causes severe diarrhœa, which he had been plagued with for some time, and which did not tend to make things better.

I was able, however, to do some good by attending to their sores, which, in a general way, were treated most shamefully, and often gave rise to severe inflammation. Nor did they come for advice until they were really bad. My treatment began with a good

homily on the subject of cleanliness. I then had the wound cleansed from the filth of weeks, and then treated it antiseptically. As a rule, these sores would heal in a reasonable time, but I had one case of rather a serious nature.

One day one of the crew came to me complaining that he felt miserably ill all over. He had pains in all his joints and limbs. I asked him where he was worst, and he said it was in his back. Weary as I was of all these fellows who had pains in one part or another, I told him it must be rheumatism, and that there was not much to be done with it. He must keep himself well clad and not expose himself to the wind more than he could help. But a day or two later the man came again and said I really must do something for him, for he was so bad he could not stand it any longer. It had taken to his arm now, which had begun to swell. My suspicions were now aroused, and I at once asked him whether he had not had a sore place on his hand. He said not, which surprised me, but then I saw a rag on one of his fingers and asked him what it meant. He said that was nothing, he had only knocked a little skin off one of his knuckles some days ago. Then I asked if the place had not been painful. He thought it might have been, just a little. I at once told him that there he had the cause of his bad arm, and that

it was entirely his own fault. If he had looked after the sore on his finger properly and kept it clean, he would never have had all this. Now he must wash his finger carefully and bare his arm, and I would come and look at it. As I supposed, it turned out to be an advanced case of blood-poisoning, and the arm was considerably swollen above the elbow. However, I did not see what I could do to it just then, but put it in a sling, strictly forbade the man to use it, and told him to keep himself quiet generally. But he got worse every day, his arm swelled, the pain increased, and he had to take to his bunk. To ease the pain we put wet bandages round the arm, but he fell into a high fever and was able to eat little or nothing. At last the arm was as big as an ordinary man's thigh. I saw it was high time for an operation, but I confess that I did not like the idea of it. Everybody thought he was bound to die, and that I might as well let him off, but it was my notion that he was going to live. I went to see him several times a day. I shall never forget the scene: a cabin containing nearly sixty men, who were making a noise, jabbering together and playing all sorts of tricks—anything indeed but a good sick-room. The sick man lay in a cramped, stuffy bunk, writhing and groaning in his pain, till the whole cabin rang with his lamentations. The place was dark and low,

ship's chests stood about, and sailors' things hung or lay strewn in every corner; the floor was dirty and slippery, and the air close and stuffy. Now and again the ship would charge against the ice, the whole hull would tremble, the man was thrown from one side of his berth to the other, a pang of pain would shoot through him, and he would utter shrieks more heart-rending than ever. It was in this place I had to lance him, as there was no question of waiting longer. A penknife ground upon a rough, coarse stone was the only suitable instrument to be found, while the operation had to be performed by the flickering light of a miserable lantern, and it was difficult enough to get anyone to hold this, so much did the others fear the sight. At last all was ready, in went the steel, and a long incision was made. The poor fellow shrieked as if we were killing him; a few drops of blood appeared, and then the matter rolled out of the wound in streams of white. It was a relief to the lookers-on, but the patient lay there groaning and half in a swoon, and then began to wander.

He was delirious at intervals for several days. The men were quite afraid to stay in the cabin, as they thought he was at the point of death. At the same time another of the crew went off his head, and of him they were still more afraid. Nor is it to be wondered at when they had one madman in their

narrow cabin, and another wandering in delirium—a state of things by no means comfortable.

I had to operate on my patient once again. The matter that came out of him might have been measured by the quart. He mended slowly, for his strength was much reduced, but before I left the ship in July I had the satisfaction of seeing him up and about again. I shall not readily forget his look of gratitude when we parted.

A recapitulation of the entries in my diary at this period would have little interest for any but Arctic travellers. I had really little to record except how we drifted into the ice and then out of it again, how the floes at one time opened and then packed close, how we saw one day more and another day less seal, and sometimes even large numbers of them on the pack-ice far inside; how we forced our way through difficulties in a race with the other ships towards these masses of seal; how they disappeared in the water just as we came up to them, and we got nothing; and very similar experiences, which made our history a mere course of repetition.

CHAPTER VIII

ATTEMPT TO LAND—DRIFTING IN THE ICE

On June 28 we were far in the ice, about 66° 24′ N. and 29° 45′ W. We could see land to the north, N.E. $\frac{1}{4}$ E. magnetic, and two mountain tops were especially prominent. However, we could not tell their real form, since, owing to the 'looming' or optical distortion so common over these ice-fields, and due to the refraction of light through the different layers of warm and cold air, they were much altered, and looked like abruptly truncated peaks rising out of an embrasured parapet. They must have been the peaks by the Blosseville coast, though they lay more to the west than those marked on the map. I had a talk afterwards with Captain Iversen of the 'Stærkodder,' who had been further into the ice to the north. He could there see land quite distinctly: a very mountainous coast—this was probably at about 68° N. L.—not low, as it was farther down, *i.e.* at about 67° N. L., where he had been in near shore in the year 1884. This account agrees to some extent with the description which Captain Holm

had from the Eskimo of Angmagsalik, and on which he based his sketch of the east coast farther north. This shore, in fact, is one of the least known regions on the earth.

On the evening of June 28 we saw a great number of seal far in among the ice. About this time we used to see them daily, but could never get at them. On July 3 we at last got a long way in amid a quantity of seal, but the ice lay so close that it was impossible to work the boats, and we consequently got nothing. In the middle of the night, when the sun gets down to the horizon, one can see a long way and very distinctly across the fields of ice. One night I went up to the mast-head to look at the seal. I turned my glasses towards land, and saw them in greater numbers than I remember to have ever seen them before. They lay, as the mate said, 'scattered about the ice like coffee.' From north-east to north-west, wherever I turned my glasses, there were seal lying as close as grains of sand, stretching away to the horizon and probably much further still, and the further away they were the thicker they seemed to be. It was glorious to see such an amount of life. The seal are not yet extinct, but they have learned wisdom, have altered their habits, and retired to the remoter pack-ice, and we get none of them.

Next day was foggy, and the floes lay closer still,

while the swell of the sea began to reach us. In the course of the afternoon we got out of the ice again.

On July 11 the ice was moving violently, as we had come into one of the stronger currents. As two or three of us were sitting in the mess-room the 'Jason' was struck so heavily by a floe on the bows that she was literally driven back. We rushed out and saw another big floe advancing with great speed upon her quarter. The shock comes, the whole vessel quivers and heels over, we hear a crash and the rudder is gone, but luckily the damage is no worse. Had the floe struck us full in the side, there is no telling what might have happened, as it would have found the sealer's weakest point.

Next day we spent fixing the spare rudder which these vessels always carry, and we were soon as seaworthy as before. But the summer was now so far advanced that there was little prospect of our getting more seal. So on July 13 it was resolved, to the satisfaction of us all, to leave the ice and make westwards for Greenland. That day, however, and the next, we did get some seal, in all about a hundred, which we passed on the outer ice.

On the night of the 14th the mate had sighted land, and the same again in the morning, and then at no very great distance. Later, however, it grew

foggy, and we could not tell how near we were, though we thought we could not be far off, as we had been sailing all day towards it in open water.

Our baggage is brought up upon deck, all preparations are made for our departure, and our de-

SEAL HUNTING. THE CAPTAIN ON THE LOOK-OUT

(By the author, from a photograph)

spatches and letters are written. Towards dinner-time, as I sit down below busy with my correspondence, I hear the magic word 'land' from the deck. I rush up, and a glorious sight meets my eyes. It seemed, so to say, to set the finest chords of my heart vibrating. Right before me through the veil of

mist lay the sunlit shore of Greenland, the glorious array of peaks which lie to the north of Cape Dan. Ingolfsfjeld is especially prominent, but further to the north there seem to be still higher tops. Never have I seen a landscape of more savage beauty, or nature in wilder confusion, than here—a landscape of sharp peaks, ice, and snow.

We were probably about thirty-five miles from land, but as we see ice ahead we turn southwards, continually drawing nearer. It looks as if we could get right into shore down by Cape Dan, as the belt here trends inwards. But as we get nearer we find that there is more ice than we expected.

On our way south we pass several enormous icebergs, and on one or two of them we saw rocks. When one first sees these monsters at a distance they look like tracts of land, and several times we thought we saw islands lying right ahead, though when we came nearer we found them to be nothing but ice. South of Cape Dan especially were numbers of these giants lying aground.

However, we could make no attempt to land that day, nor on the next. There was too much ice, the belt being from fifteen to twenty miles wide, and it seemed better to see how things looked further south.

On the 16th we passed Cape Dan, which is un-

mistakable with its round dome-like form. The ice still lay far out to sea, the belt being over fifteen miles in width. Further west, however, the blue tint of the air suggests that there is a deep inlet stretching landwards. We pin our hopes on this channel, make for it, and in the course of the night actually reach it.

When I came upon deck on the morning of the 17th. I saw plainly enough that the landing must be attempted that day, and a climb to the masthead only served to strengthen my resolve. The mountains round Sermilikfjord lay enticingly before us. Further west we could see the 'Inland ice,' the goal of our aspiration, stretching far inwards in a white undulating plain. This was the first time we had come within sight of it.

It could not have been much more than ten or twelve miles to the nearest land, and for the first bit the ice was fairly practicable. Further in certainly it seemed to be somewhat closely packed, but I could see small pools here and there, and on the whole the ground looked as if it might well have been worse. At places I could see a good deal of small ice, which makes the portage of the boats difficult, though, again, it is better to deal with than the larger floes, which are often hard to move when it is a case of forcing the boats through the water.

But what especially struck me as making the outlook hopeful was the reflection from open water which I could see from the masthead beyond the ice, and between it and land. The probability, therefore, was that when we had broken our way through the middle of the ice-belt, where the floes lay closest, we should then find looser ice merging into the open water beyond. It would no doubt have been an easy matter for a boat like the 'Jason' to push her way through this little belt, for often before we had gone through much worse ice. But then it had been a case of seal, the real business of the ship, while now things were in a somewhat different position. Had the vessel been mine, I should not have hesitated a moment about taking her in; but, as a matter of fact, we were only guests on board, and, besides, she was not insured against the risks of effecting a landing in Greenland. The currents and soundings of these waters are as yet unknown, and if the 'Jason' were to lose her propeller in the ice she would probably be gone beyond all chance of salvation. She could not well supply its place, and, worst of all, in case the ship had to be abandoned here, it might be very difficult for her crew of sixty-four men to make their way to inhabited parts with the small stock of provisions they had on board. And furthermore, as I believed that we could get through

without help, I never thought for an instant of asking the captain to take us further than to the edge of the ice, but gave orders to have our things packed and the boats got ready.

As I have already said, we had brought one boat with us which had been specially made for us in Christiania. But, as this would have been heavily laden with the somewhat voluminous equipment of the expedition, I gladly accepted the captain's kind offer of one of the 'Jason's' smaller sealing-boats. So we had the two lowered and brought alongside, and there arose an unusual bustle on board with the opening of our cases and the packing of the boats. I cannot say which were more eager to help, the members of the expedition or the ship's crew; but I think I may assert with confidence that the eagerness of the latter was not due to their anxiety to see the last of us, but to simple good-will of the most unselfish kind.

The last touches were given to our despatches and home letters; and if any of us had a specially dear friend to whom he wished to send a final farewell, it was sent, I take it, for it was not quite certain when the next meeting would be. But my companions seemed in a particularly cheerful humour, and there was no consciousness to be seen in the little band of preparation for a serious struggle. Nor

was this to be wondered at, seeing that after six weeks of waiting and longing the hour of release was now at hand. The sensation which the sight of land that morning gave me was nothing short of delicious. As I then wrote to a friend, our prospects looked brighter than I had ever dared to hope. I had a sense of elasticity, as when one is going to a dance and expecting to meet the choice of one's heart. A dance indeed we had, but not on the floor of roses which we could have wished, and our heart's choice certainly kept us a long time waiting.

I may here perhaps quote a part of the letter which I hastily wrote that day to the Norwegian paper 'Morgenbladet':—

'The "Jason": July 17, 1888.

. . . . . .

'Our landing did not come off on the 15th, or yesterday either. There was a belt of ice some fifteen or twenty miles broad between us and land. This belt certainly consisted to some extent of open ice through which we could have rowed, but we wanted to get further to the west, past Cape Dan, and to the neighbourhood of Inigsalik, to the west of Sermilikfjord, where the coast is less broken than further east. I think the country north of Cape Dan is the very wildest and roughest I have ever seen: I scarcely think the most savage parts of Norway or

even the Alps themselves are to be compared with it for mountain tops of fantastic form and Titanic aspiration. Certainly the heights are not so considerable, one of the loftiest being Ingolfsfjeld, of some 6,000 feet. This is a sharp, very conspicuous peak, which we had kept in sight during the whole of our voyage along the coast. However, I thought that further north, and possibly further inland, I could see summits which were still higher. Still, the country north of Cape Dan has not yet been explored and never even trodden by a European foot. Yesterday we passed the Cape, and at this moment we are only about ten or fifteen miles from land, with Sermilikfjord right in front of us, ready, as soon as all our preparations are made, to get into our boats and leave the ship, believing that we shall be able to row through loose and open ice all the way to the shore. To the left of us lies Inigsalikland, and behind the mountains we here see for the first time the edge of the "Inland ice," the mysterious desert which in the near future is to be, as far as we can see, our playground for more than a month.

'Inigsalikland appears to be comparatively level and not particularly broken ground, and exactly suited for the ascent of the ice. It was Captain Holm, the leader of the Danish "Konebaad" expedition, who recommended me to try this part, and, as far as

we can see from here, we are not likely to be disappointed.

'But our two boats are already alongside awaiting our departure. As there is so little ice, I have borrowed one of the "Jason's" sealing-boats to use in addition to that which we brought from home. It is much more convenient to have two and much safer as well, as we may get one crushed in the ice.

'And now it is time for us to bid the bold and plucky skipper of the "Jason," Captain Jakobsen, and all his good men, farewell. We all carry with us from the "Jason" many dear memories of good friends and pleasant hours. We enter our boats with our hope of a successful enterprise quite unshaken. A wise man of the Greeks has certainly said that hope is a waking dream, but as a matter of fact dreams sometimes reach fulfilment, and I feel sure that ours will.

'I hope to be able to reach Kristianshaab before the last Danish vessel leaves in September, and in that case we shall be home in the autumn, but if not we shall come next summer.—Good-bye. Yours,

'Fridtjof Nansen.'

Towards seven o'clock in the evening everything is ready for our start. Sermilikfjord lies now straight in front of us. According to the results of cross-

bearings taken from points on shore we ought to be about nine miles from its mouth. I go up to the mast-head for the last time to see where the ice looks easiest and what will be our best course. The reflection of open water beyond the ice is now more clearly visible than before. In a line somewhat west of Kong Oscars Havn the ice seems most open, and I determine to take that course.

More confident than ever I descend to the deck, and now the hour of departure is at hand. The whole of the 'Jason's' crew were assembled. In spite of our joy at the prospect of a successful start, I think it was with somewhat strange feelings that we bid farewell to these brave sea-folk, with whom we had now spent six weeks, and among whom we had each of us found many a faithful friend, who at this moment assumed a doubtful air or turned away his head with an expressive shake. No doubt they thought they would never see us again. We shook hands with Captain Jakobsen last of all, and in his calm, quiet way this typical Norwegian sailor bid us a kind farewell and wished us God-speed.

Then down the ladder we went, and into the boats. I took charge of our 'Jason' boat with Dietrichson and Balto at the oars, while Sverdrup steered the other with Ravna and Kristiansen.

'Ready? Give way then!' And as the boats rush

through the dark water before the first vigorous strokes, the air rings with three lusty cheers from sixty-four voices, and then come two white clouds of smoke as the 'Jason's' guns send us her last greeting. The report rolls heavily out into the thick, saturated air, proclaiming to the silent, solemn world of ice around us that we have broken the last bridge which could take us back to civilisation. Henceforth we shall follow our own path. Then good-bye! and our boats glide with regular strokes into the ice to meet the first cold embrace of that nature which for a while is to give us shelter. All of us had the most implicit faith in our luck; we knew that exertion and danger awaited us, but we were convinced that we must and should get the better of them.

When we had got some way into the ice a boat and twelve men in charge of the second mate overtook us. They had been sent by Captain Jakobsen to help us as far as they could the first part of the way by dragging our boats or forcing a passage. They kept with us for a while, but when I saw they could be of very little use to us, as we worked our way through as fast as they did, I thanked them for their kindness and sent them back. We then reach a long stretch of slack ice, wave farewell to the boat, and push on with unabated courage.

At first we advanced quickly. The ice was open enough to let us row our way to a great extent among the floes, though now and then we had to force a passage by the help of crowbars and axes. There were few places where we had to drag our boats over the ice, and then the floes were small. It had begun to rain a little before we left the 'Jason'; it now grew heavier, and the sky darkened and assumed a curiously tempestuous look. It was an odd and striking sight to see these men in their dark-brown waterproofs, with their pointed hoods, like monks' cowls, drawn over their heads, working their way surely and silently on in the two boats, one following close in the other's wake, amid the motionless white ice-floes, which contrasted strangely with the dark and stormy sky. Over the jagged peaks by Sermilikfjord black banks of cloud had gathered. Now and again the mass would break, and we could see as if through rents in a curtain far away to a sky still glowing with all the lingering radiance of an Arctic sunset, and reflecting a subdued and softer warmth upon the edges of the intercepting veil. Then in a moment the curtain was drawn close again, and it grew darker than ever, while we, stroke upon stroke, pushed indefatigably on, the rain beating in our faces. Was this an image of our own fate that we had seen, to have

all this radiance revealed to us and then hidden and cut off by a veil of thick, impenetrable cloud? It could scarcely be so, but the soul of man is fanciful and superstitious, ready to see tokens on all sides of him, and willing to believe that the elements and the universe revolve on the axis of his own important self.

The ice now gave us rather more difficulty, and we had often to mount a hummock to look out for the best way. From the top of one of these look-outs I waved a last farewell to the 'Jason' with our flag, which she answered by dipping hers. Then we start off again, and quickly, as we have no time to spare.

From the first we had had a big iceberg far to the west of us, but now for a long time we had been astonished to see how much nearer we were getting to it, though we were not working in its direction, as our course lay considerably to the east. We saw it must be the current which was taking us west. And so it was; we were being carried along with irresistible force, and it soon became plain that we could not pass to the east of this iceberg, but would have to go under its lee. Just here, however, we drift suddenly into a tearing mill-race which is driving the floes pell-mell, jamming them together and piling them one upon another. Both our boats are

in danger of destruction. Sverdrup drags his up on to a floe, and is safe enough. We take ours on towards an open pool, though every moment in danger of getting it crushed. The only course is to keep a sharp look-out, and clear all the dangerous points by keeping our boat always over the so-called 'foot,' or projecting base of the floe, or in a recess or inlet in its side, when a nip is threatened. This is not easy in these irresistible currents, but by our united efforts we succeed, and reach a large open pool to the lee of the iceberg, and are for the time secure. Now comes Sverdrup's turn; I signal to him to follow us, and he succeeds, keeping his boat in calmer water than we had.

We now find many good lanes of open water on our way inwards. The ice jams only once or twice, especially when the current carries us against one of the icebergs which lie stranded round about us, but it soon opens again, and we pass on. Our prospects are good, and our hearts are light. The weather is better too: it has ceased to rain, and the king of day is just rising behind the jagged background of Sermilikfjord, setting the still clouded heaven in a blaze and lighting his beacons on the mountain tops.

Long stretches of water lie in front of us, and I already fancy I can see from the boat the open water beyond the ice. We are very near the land to the

west of Sermilikfjord, and I can clearly and distinctly see the stones and details of the rocks and mountain side. It does not seem possible that anything can stop us, and prevent our landing, and we are so self-confident that we already begin to discuss where and when we shall take our boats ashore. Just at this moment the ice packs, and we are obliged to find a place of safety for our boats, and drag them up. This we do, Sverdrup a little way off us. We have not secured a very desirable harbour for our boat, as the approach is too narrow, and when the floes part again and we are taking her out, a sharp edge of ice cuts through a plank in her side. She would no longer float, and there was nothing to be done but unload her and pull her up on to the floe for repairs. Sverdrup and Kristiansen took her in hand and mended her again with really masterly skill, and with little loss of time, considering the wretched implements they had to use. We had nothing to give them but a bit of deal which had formed the bottom board of one of the boats, some nails, a hatchet, and a wooden mallet. This broken boat, however, settled our fate. While we were at work the ice had packed again, the clouds had gathered, and the rain began to pour down in torrents, enveloping all around in gloom and mist. The only thing to be done was to get up our tent and wait.

It is now ten o'clock on the morning of the 18th of July. The best thing we can do is to crawl into our sleeping-bags and take the rest which is not unwelcome to us after fifteen hours' hard and continuous work in the ice.

Before we turned in, it grew a little clearer seawards, and through a break we caught sight of the 'Jason' far away. She was just getting up full steam, and a while later she disappeared in the distance, no doubt comfortably believing that we were now safe on shore. This was our last glimpse of her.

'When Ravna saw the ship for the last time,' writes Balto, 'he said to me: "What fools we were to leave her to die in this place. There is no hope of life; the great sea will be our graves." I answered that it would not have been right for us two Lapps to turn back. We should not have been paid, and perhaps the Norwegian consul would have had to send us to Karasjok out of the poor rates. This would have been a great disgrace.'

While we were asleep it was necessary for one of us to keep watch in order to turn the others out, in case the ice should open enough to let us make further progress. Dietrichson at once volunteered for the first watch. But the ice gave little or no sign of opening. Only once had I to consider the

possibility of setting to work again, but the floes closed up immediately. Dragging our boats over this ice was not to be thought of; it was too rough, and the floes were too small. So, while the rain continues we have more time for sleep and rest than we care for.

In fact, we were already in the fatal current. With irresistible force it first carried us westwards into the broader belt of ice beyond Sermilikfjord. Here it took a more southerly direction and bore us straight away from shore, at a pace that rendered all resistance on our part completely futile. Had we not been detained by our broken boat, we should probably have been able to cross the zone where the current ran strongest and get into quieter water nearer shore. As it was, the critical time was wasted and we were powerless to recover it.

The force of the current into which we had thus fallen was considerably greater than had been previously supposed. That a current existed was well known, and I had taken measures accordingly, but, had I had a suspicion of its real strength, I should certainly have gone to work in a different way. I should in that case have taken to the ice considerably further to the east, and just off Cape Dan, and had we then worked inwards across the line of the stream we should probably have got through the ice before

we were driven so far west, *i.e.* past the mouth of Sermilikfjord, and into the broader belt of ice where the current turns southwards. Then we should, as we had expected, have reached shore all well on July 19, and chosen our landing-place where we had pleased. But now it was our fate to see how well we might have managed. We had seen the open water under the shore, we had seen the rocks on the beach; a couple of hours of easy work, and we should have been there. But Paradise was barred in our faces; it was the will of Destiny that we should land many miles to the south.

Meanwhile the rain is descending in streams, and we are constantly at work keeping our tent-floor clear of the pools of water which finds its way in through the lace-holes. After we have spent nearly twenty-four hours in the tent, mainly engaged in this occupation, the ice opens enough to tempt us to continue our efforts to reach land with renewed courage and restored vigour. This was at six o'clock on the morning of July 19.

The rain has abated somewhat, and through an opening in the fog we can see land somewhere near Sermilikfjord. We are much more than double as far distant from it as we had been—some twenty miles, in fact; but we look trustfully forward to the future. For even if we did not reach shore at

Inigsalik, as we had hoped, we can still do so further south at Pikiudtlek. All we have to do is to work resolutely across the current, and we must get to shore sooner or later. As far as we could see, this was plain and simple reasoning and gave us no ground for apprehension, but experience was to show us that our premisses were not altogether in accordance with fact. The main factor in the calculation, the strength of the current, was unfortunately an extremely uncertain quantity.

However, determination and courage were not wanting. We worked with glee, got to the lee of a huge iceberg, found lanes of open water stretching far inwards, and pushed a good way on towards land.

Then the ice packs again, and we have to take refuge on a floe once more. The sun now finds its way through the clouds from time to time, so we pull our boats right up on to the floe, set up our tent and settle down as comfortably as we can, get a change of clothes on, and dry a few of our wet things. This was a process I had especial need of, as in the course of our day's work I had fallen into the water owing to the breaking of the edge of a floe as I was jumping into the boat. An involuntary bath of this kind was, however, an almost daily experience to one or other member of the expedition. Later on in the day the sun comes out altogether,

and we pass a really pleasant afternoon. We do thorough justice to the tins of provisions sent us from the Stavanger Preserving Factory, and we have no lack of drink. Had we had no more beer in our keg, we could have found plenty of the most delightful drinking-water in pools on the floes.

Our keg, I may say, belonged to the boat the 'Jason' had handed over to us. All the small boats attached to the sealers are provided with a keg of beer and a chest of bread and bacon. The keg and chest the captain had let us carry off well supplied, much to our present comfort.

We now for the first time can hear rather clearly the sound of breakers on the edge of the ice towards the sea, but pay no particular attention to the fact. We seem to be drifting straight away from land, and the tops of the mountains by Sermilikfjord gradually diminish.

That evening I sit up late, long after the others have crept into their bags, to take some sketches. It is one of those glorious evenings with the marvellously soft tones of colour which seem to steal so caressingly upon one, and with that dreamy, melancholy light which soothes the soul so fondly and is so characteristic of the northern night. The wild range of jagged peaks in the north by Sermilikfjord stands out boldly against the glowing sky, while the

huge expanse of the 'Inland ice' bounds the horizon far away to the west, where its soft lines melt gently into the golden background.

The evening was lovely, and the 'Inland ice' lay temptingly and enticingly just before me. Strange that a narrow strip of drifting floes should be able to divide us so hopelessly from the goal of our desires! Is not this often the case in life? The land of enchantment looks so alluring and so near. One spring would take us there, it seems. There is but one obstacle in our way, but that one is enough.

As I sit and sketch and meditate I notice a rumbling in the ice, the sound of a growing swell which has found its way in to us. I turn seawards, where it looks threatening, and, thinking that there is a storm brewing out there, but that that is of small consequence to us, I go at last to join my slumbering comrades in the bags to sleep the sleep of the just.

Next morning, July 20, I was roused by some violent shocks to the floe on which we were encamped, and thought the motion of the sea must have increased very considerably. When we get outside we discover that the floe has split in two not far from the tent. The Lapps, who had at once made for the highest points of our piece of ice, now shout that they can see the open sea. And so it is;

far in the distance lies the sea sparkling in the morning sunshine. It is a sight we have not had since we left the 'Jason.'

I may here reproduce the entries in my diary for this and the following day :—

'The swell is growing heavier and heavier and the water breaking over our floe with ever-increasing force. The blocks of ice and slush, which come from the grinding of the floes together, and are thrown up round the edges of our piece, do a good deal to break the violence of the waves. The worst of it all is that we are being carried seawards with ominous rapidity. We load our sledges and try to drag them inwards towards land, but soon see that the pace we are drifting at is too much for us. So we begin again to look around us for a safer floe to pitch our camp on, as our present one seems somewhat shaky. When we first took to it it was a good round flat piece about seventy yards across, but it split once during the night, and is now preparing to part again at other places, so that we shall soon not have much of it left. Close by us is a large strong floe, still unbroken, and thither we move our camp.

'Meanwhile the breakers seem to be drawing nearer, their roar grows louder, the swell comes rolling in and washes over the ice all round us, and the situation promises before long to be critical.

'Poor Lapps! they are not in the best of spirits. This morning they had disappeared, and I could not imagine what had become of them, as there were not many places on our little island where any of us could hide ourselves away. Then I noticed that some tarpaulins had been carefully laid over one of the boats. I lifted a corner gently and saw both the Lapps lying at the bottom of the boat. The younger, Balto, was reading aloud to the other out of his Lappish New Testament. Without attracting their attention I replaced the cover of this curious little house of prayer which they had set up for themselves. They had given up hope of life, and were making ready for death. As Balto confided to me one day long afterwards, they had opened their hearts to one another here in the boat and mingled their tears together, bitterly reproaching themselves and others because they had ever been brought to leave their homes. This is not to be wondered at, as they have so little interest in the scheme.

'It is glorious weather, with the sun so hot and bright that we must have recourse to our spectacles. We take advantage of this to get an observation, our bearings showing us to be in 65° 8′ N. and 38° 20′ W., *i.e.* 30 minutes or about 35 miles from the mouth of Sermilikfjord, and from 23 to 25 minutes or about 30 miles from the nearest land.

'We get our usual dinner ready, deciding, however, in honour of the occasion, to treat ourselves to pea-soup. This is the first time we have allowed ourselves to cook anything. While the soup is being made the swell increases so violently that our cooking apparatus is on the point of capsizing over and over again.

'The Lapps go through their dinner in perfect silence, but the rest of us talk and joke as usual, the violent rolls of our floe repeatedly giving rise to witticisms on the part of one or other of the company, which in spite of ourselves kept our laughing muscles in constant use. As far as the Lapps were concerned, however, these jests fell on anything but good ground, for they plainly enough thought that this was not at all the proper time and place for such frivolity.

'From the highest point on our floe we can clearly see how the ice is being washed by the breakers, while the columns of spray thrown high into the air look like white clouds against the background of blue sky. No living thing can ride the floes out there as far as we can see. It seems inevitable that we must be carried thither, but, as our floe is thick and strong, we hope to last for a while. We have no idea of leaving it before we need, but when it comes to that, and we can hold on no longer, our last chance will be

to try and run our boats out through the surf. This will be a wet amusement, but we are determined to do our best in the fight for life. Our provisions, ammunition, and other things are divided between the two boats, so that if one is stove in and sinks we shall have enough to keep us alive in the other. We should probably be able to save our lives in that case, but of course the success of the expedition would be very doubtful.

'To run one of our loaded boats into the water through the heavy surf and rolling floes without getting her swamped or crushed will perhaps be possible, as we can set all our hands to work, but it will be difficult for the crew of the remaining boat to get their ship launched. After consideration we come to the conclusion that we must only put what is absolutely necessary into one boat, and keep it as light as possible, so that in case of extremity we can take to it alone. For the rest, we shall see how things look when we actually reach the breakers.

'We have scarcely half a mile left now, and none of us have any doubt but that before another couple of hours are passed we shall find ourselves either rocking on the open sea, making our way along the ice southwards, or sinking to the bottom.

'Poor Ravna deserves most sympathy. He is not yet at all accustomed to the sea and its caprices.

He moves silently about, fiddling with one thing or another, now and again goes up on to the highest points of our floe, and gazes anxiously out towards the breakers. His thoughts are evidently with his herd of reindeer, his tent, and wife and children far away on the Finmarken mountains, where all is now sunshine and summer weather.

'But why did he ever leave all this? Only because he was offered money? Alas! what is money compared with happiness and home, where all is now sun and summer? Poor Ravna!

> 'Väl är farväl det svåraste bland orden
> Och mycket skönt der finnas än på jorden.'

'It is but human at such moments to let the remembrance dwell on what has been fairest in life, and few indeed can have fairer memories to look back upon than yours of the mountain and reindeer-herd.

'But here, too, the sun is shining as kindly and peacefully as elsewhere, down on the rolling sea and thundering surf, which is boiling round us. The evening is glorious, as red as it was yesterday, and as no doubt it will be to-morrow and ever after, setting the western sky on fire, and pressing its last long passionate kiss on land and ice and sea before it disappears behind the barrier of the "Inland ice." There is not a breath of wind stirring, and the sea is rolling

in upon us ruddy and polished as a shield under the light of the evening sky. The words of our good old song come unconsciously into my mind :—

> 'Havet er skjönt naar det roligen hvælver
> Staalblanke skjold over vikingers grav.'

'Beautiful it is, indeed, with these huge long billows coming rolling in, sweeping on as if nothing could withstand them. They fall upon the white floes, and then, raising their green, dripping breasts, they break and throw fragments of ice and spray far before them on to the glittering snow, or high above them into the blue air. But it seems almost strange that such surroundings can be the scene of death. Yet death must come one day, and the hour of our departure could scarcely be more glorious.

'But we have no time to waste ; we are getting very near now. The swell is so heavy that when we are down in the hollows we can see nothing of the ice around us, nothing but the sky above. Floes crash together, break, and are ground to fragments all about us, and our own has also split. If we are going to sea we shall need all our strength in case we have to row for days together in order to keep clear of the ice. So all hands are ordered to bed in the tent, which is the only thing we have not yet packed into the boats. Sverdrup, as the most experienced and cool-headed among us, is to take the first watch and

turn us out at the critical moment. In two hours Kristiansen is to take his place.

'I look in vain for any sign which can betray fear on the part of my comrades, but they seem as cool as ever, and their conversation is as usual. The Lapps alone show some anxiety, though it is that of a calm resignation, for they are fully convinced that they have seen the sun set for the last time. In spite of the roar of the breakers we are soon fast asleep, and even the Lapps seem to be slumbering quietly and soundly. They are too good children of nature to let anxiety spoil their sleep. Balto, who, not finding the tent safe enough, is lying in one of the boats, did not even wake when some time later it was almost swept by the waves, and Sverdrup had to hold it to keep it on the floe.

'After sleeping for a while, I do not know how long, I am woke by the sound of the water rushing close by my head and just outside the wall of the tent. I feel the floe rocking up and down like a ship in a heavy sea, and the roar of the surf is more deafening than ever. I lay expecting every moment to hear Sverdrup call me or to see the tent filled with water, but nothing of the kind happened. I could distinctly hear his familiar steady tread up and down the floe between the tent and the boats. I seemed to myself to see his sturdy form as he paced

calmly backwards and forwards, with his hands in his pockets and a slight stoop in his shoulders, or stood with his calm and thoughtful face gazing out to sea, his quid now and again turning in his cheek—I remember no more, as I dozed off to sleep again.

'I did not wake again till it was full morning. Then I started up in astonishment, for I could hear nothing of the breakers but a distant thunder. When I got outside the tent I saw that we were a long way off the open sea. Our floe, however, was a sight to remember. Fragments of ice, big and little, had been thrown upon it by the waves till they formed a rampart all round us, and the ridge on which our tent and one of the boats stood was the only part the sea had not washed.

'Sverdrup now told us that several times in the course of the night he had stood by the tent-door prepared to turn us out. Once he actually undid one hook, then waited a bit, took another turn to the boats, and then another look at the surf, leaving the hook unfastened in case of accidents. We were then right out at the extreme edge of the ice. A huge crag of ice was swaying in the sea close beside us and threatening every moment to fall upon our floe. The surf was washing us on all sides, but the rampart that had been thrown up round us did us good service, and the tent and one of the boats still stood high and dry.

SVERDRUP'S WATCH ON THE FLOE (JULY 20)
(By E. Nielsen, from a sketch by the Author)

The other boat, in which Balto was asleep, was washed so heavily that again and again Sverdrup had to hold it in its place.

'Then matters got still worse. Sverdrup came to the tent-door again, undid another hook, but again hesitated and waited for the next sea. He undid no more hooks, however. Just as things looked worst, and our floe's turn had come to ride out into the middle of the breakers, she suddenly changed her course and with astonishing speed we were once more sailing in towards land. So marvellous was the change that it looked as if it were the work of an unseen hand. When I got out we were far inside and in a good harbour, though the roar of the breakers was still audible enough to remind us of the night. Thus for this time we were spared the expected trial of the seaworthiness of our boats and our own seamanship.

CHAPTER IX

STILL DRIFTING

'The 21st of July is a quiet day following a stormy night. All is rest and peace; we are drawing steadily away from the sea, the sun is shining kind and warm, round us stretch the fields of ice in silence and monotony, and even the Lapps seem relieved.

'One thought only consumes me: the prospect of the expedition failing for this time, and of a year being thus thrown away. Well, we can only do our best, and for the rest, as we say at home, "anoint ourselves with the good virtue of patience."

'We take advantage of the sun to get an observation. We find ourselves to be 64° 39′ N. and 39° 15′ W. We can still see the peaks by Sermilikfjord, and the "Inland ice" from Pikiudtlek northward toward Inigsalik stretches majestically in front of us, looking with its flat unbroken horizon like one vast white expanse of sea. No peaks rise from its surface except a fringe of dark tops and rocky points here and there along its outer edge.

'Down here the coast is very different from the sur-

roundings of Sermilik, Angmagsalik, and Ingolfsfjeld. There, further north, the land rose high, abrupt, and wild out of the sea, the calm surface of the "Inland ice" hidden behind a glorious range of Titanic peaks, whose sublime beauty captivated and held the eye, and whose summits the all-levelling ice-mantle has never been able to envelop, destroy, and carry with it to the sea. Here, on the contrary, the land is low, the ice-sheet has brought its limitless white expanse down to the very shore, and the few projecting points that do appear are humble and unobtrusive. They have been planed by the ice, which by its overpowering might has borne all before it seawards. Wildness there is here too, but the wildness of desolation and monotony. There is nothing to attract the eye or fix its gaze, which therefore roams helplessly inwards over the alluring desert of snow, till it is lost in the far distance, where the horizon bars its further range. Sad to say, it is all too far distant from us. It is strange that we should have been so near our goal and then driven so far to sea again.

'The floes now part a little, and we see a stretch of slack ice leading inwards. We launch one boat and try to make some way, but to little purpose, as the slush of ice and snow that lies between the floes and comes from their grinding together in the swell is so thick that our heavily laden craft will make no

progress. So we abandon the attempt; to drag our sledges and boats over the floes is out of the question too, as the channels between them are too wide. We still hear the breakers in the distance; the swell still rolls in and keeps the ice packed close.'

This day, the first on which we found time to do anything but simply work our way ahead or sleep, our meteorological record was begun. It was kept mainly by Dietrichson, who always, even in the most trying circumstances, devoted himself to it with most praiseworthy ardour. We noted chiefly the temperature, the pressure, the moisture of the air, the direction and force of the wind, and the extent and form of the clouds. Observations were taken as often and as circumstantially as possible, but of course on such an expedition, every member of which is as a rule fully occupied with work of an arduous kind, many gaps are likely to occur in the meteorological record. This is especially the case at night, when one takes the rest earned by a day of real exertion. Yet I think I may say that the record we brought home is in spite of all remarkably complete, and contains many valuable observations, thanks to Dietrichson's indefatigable zeal.

The days that now follow, spent in drifting in the ice southwards along the coast, are somewhat monotonous, each much as its fellow. Every day

we watch intently the direction we are drifting, the movements of the ice, and every gust of wind, in the hope that a lucky turn may bring us in to land. From the darkness of the air overhanging the ice, we feel sure there must be open pools along the shore, or else in the ice to the south of us. It is a life of hopes and disappointments, and yet a life not without pleasant memories for many of us.

As some of my readers may find it interesting, and especially such as may contemplate future expeditions in the ice, I will give a short extract from the entries in my diary at this time. To others I will recommend a skip to the next chapter:—

'Late in the afternoon of July 21, from a high hummock of ice, we can see a very narrow channel stretching far away to the south of us. As far as we can judge we are drifting along this towards its end, which seems to be far in towards shore. Our hope of a change in our luck, and a speedy landing, naturally at once increases.

'*July* 22.—In the night a fog comes on and hides everything from us. We cannot tell which way we are drifting, but the breakers sound no less distinct than they have been. Later at night, however, we do not hear them so plainly, and the swell quiets down a little.

'The fog continues the whole day, and the rolling

as well. At noon, however, it clears up so much overhead that, by the help of a pool of water on our floe as an artificial horizon, I can take an observation. I find our latitude to be 64° 18′ N., so we are moving well southwards.

'As in the course of the morning the ice opens a little, we try an empty boat in the slush between the floes. We can get on, but it is very slowly, and we think it is better to save our strength, as in the fog we cannot see which way we had better work. Possibly a good chance of pushing for land may offer, and we shall then want all our energy.

'In the afternoon it clears, and we seem to be possibly a little nearer land. A gentle breeze from the magnetic N. by E., or about the true W. by N., begins to blow, and we hope it may increase and part the ice, though the rolling still goes on. What we want is a good storm from land, which would kill this swell which is rolling in and holding the ice together, and would carry the floes seawards instead, while we should be able to push in between them.

'We see a number of big seal, bladder-nose, lying on the floes around us. Many of them bob their big round heads out of the pools close alongside our floe, stare wonderingly at these new dwellers on the ice who have thus appeared, and then, often with a violent splash, vanish again. This is a daily

experience. We could easily shoot them, but, as we do not want them now, we leave them in peace. We have enough fresh meat as yet, a big haunch of our little horse which we brought off the "Jason." Through the afternoon the ice remains packed.

'*July* 23.—During the night we keep watch, two hours apiece, and we get a good laugh at Ravna. He does not understand the clock, and did not know when his two hours were up. So to make safe he willingly kept at it for five or six hours before he turned the next man out with the innocent inquiry whether he did not think the two hours were over.

'At half-past seven Dietrichson calls us up. We find the ice open, and, though there is slush between the floes, practicable. After loading our boats and waiting half an hour on account of the ice packing again, we really get some way in to some pools which I can see from a high point stretch landwards. For a time we get on fast. Before we left our last floe a flock of some black duck flew past us, making north. The sight was like a greeting from land, and served to raise our hopes still further. It is quite astonishing, otherwise, what a scarcity of bird-life there is up here. There is not even a gull to be seen.

'We work inwards towards land the whole day, wait patiently while the ice packs, but push on all the

harder when it opens again. As we get near land our hopes rise. A raven comes flying from the south-west and passes over our heads, making northwards. This is another greeting from land, and we are still more encouraged.

'We see several big seal, full-grown bladder-nose, lying about the floes round us. The temptation is too strong for a sportsman to withstand, and Sverdrup and I start off to shoot an old "*hættefant*," as we call him, *i.e.* an old male with the bladder on his nose, who was lying close by. I managed to stalk him successfully and shot him, but when we got up to him he was not quite dead. In my zoological zeal I wish to improve the occasion by making observations on the colour of the eyes, the form of the bladder in the living animal, and other points which are not yet clearly known to science. While I am thus engaged the seal flaps along towards the edge of the floe, and before we know what he is about he is slipping off the ice into the water. As he is falling I drive the seal-hook I am carrying into him, and Sverdrup does the same with his boat-hook. It is now a case of pull-devil, pull-baker between us, and we try and hold up the seal's tail and hinder parts, in which his strength lies, so that he shall not get a stroke in the water with them. For a time we succeed, but with difficulty, for in his death-agony his strength is great.

So, finding that we have not a really good hold of him, I tell Sverdrup to take the rifle and shoot him, and I will try and keep him up meanwhile. He thinks, however, that his hold is better than mine, and that I had better leave go, and, while we are hesitating, both our hooks come away, the seal gives a couple of violent flaps, and is gone. Crestfallen and discomfited, we look now blankly in each other's faces, now helplessly into the dark water, where an air-bubble rises mockingly here and there to break on the surface, and to give us our seal's last greeting. Though he would have been of no great use to us, we felt not a little foolish at having lost so fine a booty in so silly a way. Sverdrup, too, thought he was the biggest seal he had ever seen. Compassionate readers may console themselves with the thought that his sufferings were of no long duration. His struggles were but the last convulsions of his death-agony. The bullet had certainly been of somewhat small calibre, but had hit him in the right place, in the head.

'As the evening wears on we are stopped. We have got into some unusually rough and difficult hummocky ice, which is closely packed and makes the hauling of the boats almost impossible. So we spread our tent with the sleeping-bags on the top in order to be the more ready for a start in case the ice

opens. We then get into our bags, setting the usual watch, but as it turns out the ice does not open. The dew is very heavy during the night, so that the bags are found very wet in the morning.

'*July* 24.—To-day the ice is packed just as close, and we determine to drag the boats and sledges landwards. Most of our baggage is laid on the sledges, so that they can be put into the boats when we come

AT WORK WITH THE BOATS

(*By E Nielsen, after photographs*)

to open water. Just as we are ready to start, the ice opens, and we manage to punt ourselves along a good way, though eventually we have to take to hauling. We get on but slowly, as the ice is not at all good, but this is at least better than nothing, and we are steadily approaching land. Our hopes are at their culmination. It is the coast north of Igdloluarsuk which we see before us, and we begin at once to reckon how long it will take us to reach Pikiudtlek,

where we shall be able to begin our journey over the ice. To-day, too, we see more birds: a raven and a flock of eight short-tailed skuas. Birds are always a comfort to us, and make our life much brighter.

'As the ice is difficult and the sun hot in the middle of the day, we halt and pitch our tent while dinner is being prepared. It consists to-day of raw horse-flesh and marrowfat peas. The preparation gave rise to a comical scene. From the horse's leg which we brought with us from the "Jason" I proceeded to cut off as much meat as I thought was enough for six men, chopped it up on the blade of an oar, turned it into one of the divisions of our cooker, sprinkled some salt on it, added the contents of a couple of tins of peas, stirred the whole mixture up, and our dinner was ready. Balto had been standing by my side the whole time, watching every movement intently, and indeed now and again giving me his assistance. He was hungry, and was looking forward to a good dinner, as he told me. Though, like the Lapps and other unenlightened folk generally, he had very strong prejudices against horse-flesh, yet, when he saw me pour the peas in, he informed me that it looked uncommonly good. I said nothing, and gave him no hint that it was going to be eaten raw, but when it was all ready took the dish and put it down before the others, who were sitting outside the tent, and told

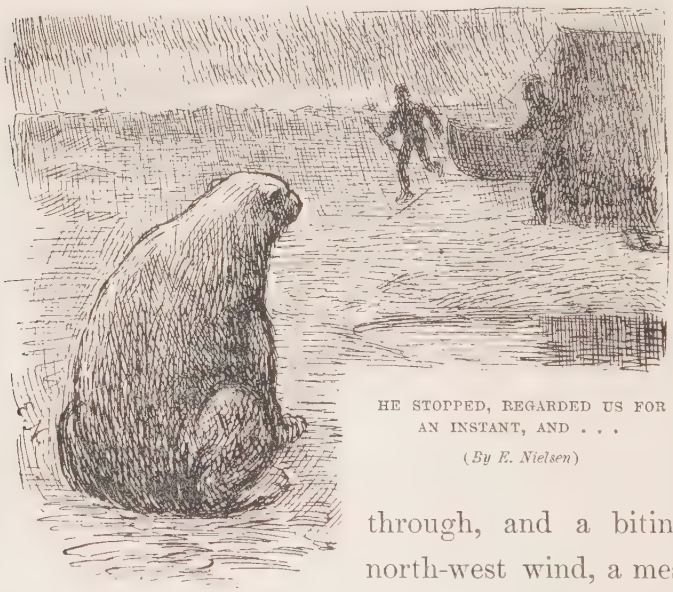
them to help themselves. Those who had the good fortune to see it will not easily forget the face that Balto assumed at this juncture. It first expressed the supremest astonishment and incredulity, and then, when he discovered that it was bitter earnest, there followed a look of disgust and contempt so intensely comical that it was quite impossible for us to restrain our laughter. Balto now told Ravna in Lappish how matters stood, and he, up to this time an indifferent spectator, now turned away with an expression of, if it were possible, still greater scorn.

'The rest of us, not letting this spoil our appetites, fell to with vigour, and did full justice to this nourishing and wholesome dish, with which we were more than satisfied. The two Lapps, had they said anything at all, would have called us heathens, for, as they explained one day afterwards, it was only heathens and beasts of the field that ate meat raw. But at the time they said nothing, but maintained an attitude of dumb despair at the fate which had thrown them into the society of savages, who had, as they often used to say, "such strange ways, quite different from those of the Lapps." They could scarcely endure to see us eating. I could, of course, easily have cooked some of the meat for them, but we had to be sparing of the spirit. We were likely to want it all later on, and it was only two or three

times during our wanderings in the floe-ice that we allowed ourselves the luxury of cooking anything. As a rule all our food was cold, and for drink we had either plain water, of which we had an abundance in larger and smaller pools on the floes, or else a mixture of water and preserved milk, which made a pleasant and refreshing beverage. This time the Lapps were treated to tinned beef instead of the horseflesh, and they seemed quite consoled for the first disappointment, the beef being pronounced by Balto to be "good clean food." How common it is to see things in this life turned completely upside down by prejudice!'

In connexion with the above I will quote an answer Balto gave one day after we reached home to some one who asked what his worst experience had been in the course of his travels. 'The worst thing,' said Balto, 'was once when we were drifting in the ice and were just being carried out into the Atlantic. I asked Nansen whether he thought we should get to land, and he said "Yes." Then I asked him what we should do if we did, and he said we should row northwards. I wanted to know what we should live on if we did not get over to the west coast, and he said we should have to shoot something. Then I asked how we should cook it when we got it, and Nansen answered that we should have to eat it raw, which made Balto very depressed.'

'Towards evening we again advance a little, but, as the ice is not close-packed, and the swell is heavy, while the eddies and suction caused by the rolling of the floes are nasty for the boats, we soon resolve to camp for the night and wait for better times. There was a thick wet fog about us which soaked our clothes



HE STOPPED, REGARDED US FOR AN INSTANT, AND . . .
(*By E. Nielsen*)

through, and a biting north-west wind, a message from the "Inland ice," which I hoped presaged the opening of the floes.

'*July* 25.—At half-past four I am woke by Kristiansen, the watch, calling in at the tent-door, "Nansen, there is a bear coming." I tell him to get a rifle out of the boat, slip my boots on meanwhile, and run out in a very airy costume. The bear was

coming at full speed straight for the tent, but just as Kristiansen came back with the rifle he stopped, regarded us for an instant, and suddenly turned tail. At that moment he was no doubt within range, but the rifle was in its case, and before I could get it out it was too late. It was very annoying, but the others at least had the pleasure of seeing a polar bear, which they had long sighed for.

'Balto was the only one who did not wake at the alarm in the night. In the morning he told us that during his watch, which came just before Kristiansen's, he had been so afraid of bears that he had not dared to stir from the tent the whole time. He was much astonished and very incredulous when we told him there really had been a bear about the place.

'After breakfast we started off hauling again, but had to give up at the very next floe, because the swell was increasing. Ever since the day we were out among the breakers we have had more or less of this rolling, which besides keeps the ice packed and prevents our getting to land.

'During the day the ice opens very much from time to time, but soon packs again. I dare not try to push on, as there is so much brash between the floes, and as there are no safe harbours of refuge for us to take to when the ice nips with the extreme suddenness which is its way now. The "feet" or

projecting bases of the floes are at other times safe resorts, but now they are quite spoilt by these nasty eddies, which are most destructive to boats.

'As we can find nothing better to do, we set to work to clean the sledge-runners of rust, so that they will move better. When this is done we get our dinner ready, which to-day consists of bean-soup, to which the remains of yesterday's raw meal and some more meat are added. During the cooking we take the latitude, which is 63° 18′ N., and the longitude, taken later in the afternoon, proves to be about 40° 15′ W. We are thus about eighteen minutes or nearly twenty miles from land, and have drifted considerably further away than we were yesterday. Our hopes, which were then so bright, grow dim again, but a raven passing us to-day too brings us some consolation.

'Dinner is at last ready and the soup poured out into the few cups we possess, which are supplemented by meat-tins. We fall to, and all—the Lapps even included—find the soup excellent. Then to his horror and despair Ravna suddenly discovers that the meat in the soup is not properly cooked. From this moment he refuses to touch another morsel, and sits idle with a melancholy look on his face which sets us all laughing. On such occasions his puckered little countenance is indescribably comical. Balto

is not much better, though he manages to drink the soup, which he finds "first-rate," but the meat he gently deposits in a pool of water by his side, hoping that I shall not notice it. He now declares that he can say, in the words of the prophet Elias: "Lord, that which I have not eaten, that can I not eat." I tried to make him understand that Elias could certainly never have said anything of the kind, because he did eat what the Lord sent him, but that another man, known as the Apostle Peter, no doubt did say something like this, though it was in a vision, and the words were meant figuratively. Balto only shook his head doubtingly, and still maintained that none but heathens and beasts of the field would eat raw meat. We console the Lapps by giving them a meat-biscuit each. It is, of course, no use trying to teach old dogs to bark, and I really believe they would both have died of starvation rather than eat raw horseflesh.

'To-day both Dietrichson and Kristiansen complain of irritation in the eyes, and I recommend every one to be careful to wear their glasses henceforward.

'The ice remains about the same during the afternoon, while we drift fast southwards. In the course of the previous night we had been carried away from land, but we now seem to be drawing nearer it

again. In the afternoon we are right off Skjoldungen, an island well known from Graah's voyage. Since we have come south of Igdloluarsuk we have again had a glorious Alpine region in view, with sharp and lofty peaks, and wild fantastic forms, which in

DOMESTIC LIFE ON THE FLOE-ICE
(*From a photograph*)

the evening and sunset glow are an especially fascinating sight.

'The rolling is increasing in an astonishing way, though we are far from the edge of the ice. There must be a very heavy sea outside.

'We begin to find it cold at night, and put all the tarpaulins and waterproofs we can spare under our

sleeping-bags. We may just as well make things as pleasant as possible.

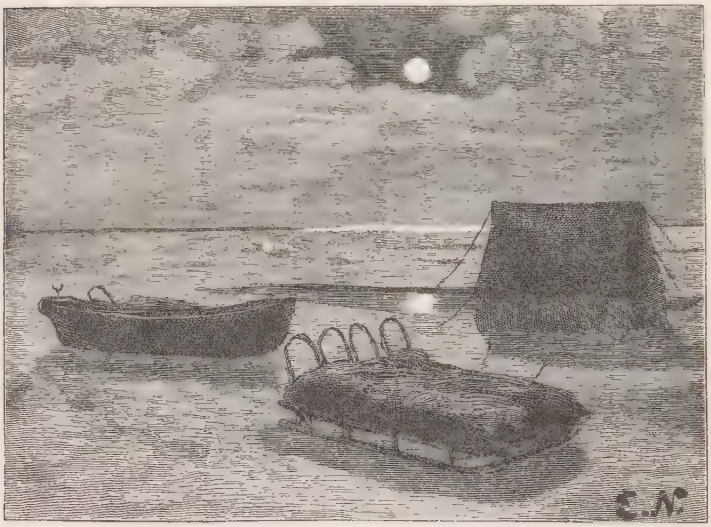
'When the rest go to bed I take the first watch in order to finish my sketches of the coast. This is very difficult, as we are so far south that the nights have already begun to darken considerably. My thoughts, however, soon desert pencil and sketch-book for contemplation of the night.

'Perfect stillness reigns, not a breath of wind is stirring, and not even the growing swell can destroy the prevailing peace. The moon has risen large and round and with a strange ruddy glow up from the ice-fields to the east, and in the north there is still a narrow golden strip of evening light. Far away under the moon and above the ice is a gleaming band which shows the open sea; inside this and all around is ice and snow, and nothing but ice and snow; behind lie the Greenland Alps with their marvellously beautiful peaks standing out against a dusky, dreamy sky.

'It is strange indeed for a summer night, and far different from those scenes that we are wont to connect with moonlight and summer dreams. Yet it has fascination of its own, which more southerly regions can scarcely rival.

'On the ice before me stand the boats, the sledges, and the tent, in which my tired comrades are lying

in sound slumber. In a pool of water by my side the moon shines calm and bright. All nature lies in an atmosphere of peace. So lately we had the day with all its burning eagerness and impatience, with its ponderings and restless designs upon the goal of our undertaking—and now all is stillness and repose.



NIGHT AMONG THE FLOES
(*By E. Nielsen, from a sketch by the Author*)

Over all the moon sheds her soothing light, her beams floating through the silence of the polar night, and gently and softly drawing the soul in their train. The thoughts and powers of Nature herself seem to pervade all space. One's surroundings of place and time vanish, and before one appears the perspective of a past life instead.

'And, when all comes to all, what is our failure to be reckoned? Six men drifting southwards on a floe, to land eventually at a point other than that contemplated. And either, in spite of this, we reach our goal—and in that case what reason have we to complain?—or we do not reach it, and what then? A vain hope has been disappointed, not for the first time in history, and if we have no success this year we may have better luck the next.

'*July* 26.—No change, except that we are nearer the edge of the ice and the open sea. The swell seems to have gone down considerably, and, though the sea is much nearer, we feel the rolling less than yesterday.

'We are drifting southwards along the coast, apparently at great speed.

'For the time there is nothing for us to do, as the ice does not lie close enough to let us haul our boats and sledges while this rolling is going on, but is packed too close to let us row or punt our boats through.

'We are kept in the tent by the rain.

'We have to encourage the Lapps, who seem to lose their spirits more and more, because they think we shall end by being driven out into the Atlantic. We are sitting and talking of our prospects of reaching land, and we agree that in any case we

shall be able to manage it at Cape Farewell. We calculate how much time this will leave us, and come to the conclusion that we shall still be able to work up the coast again and cross the ice. Some of the others maintain that even if we are too late this year it will be best to start northwards at once, get through the winter as we best can, and then cross over to the west coast in the spring. My opinion is that this will not be a very prudent proceeding, as it will be difficult for us to keep the provisions intact which we have brought with us for the crossing. Dietrichson thinks that this will be the only course open to us, as he considers a return entirely out of the question, and, as he says, "We shall risk nothing but our lives, anyway."

'While this discussion is going on, Balto says to me: "Don't talk about all this, Nansen; we shall never get to land. We shall be driven out into the Atlantic, and I only pray to my God to let me die a repentant sinner, so that I may go to heaven. I have done so much wrong in my life, but regret it bitterly now, as I am afraid I shall not be saved." I then asked him if he did not think it necessary to repent of his sins, even if he were not on the point of death. He said that he had no doubt one ought, but there was not so much hurry about it in that case. However, if he came out of this alive, he

would really try and lead a better life. This seemed to me a naïve confession of a peculiar faith, a faith which is, however, probably not uncommon in our society. I then asked him if, in case he reached his home again, he would give up drinking. He said he thought he would, or at any rate he would drink very little. It was this cursed drink, he told me, that was the cause of his being here in the ice. I asked how that was, and he said that he was drunk when he met a certain X., who asked him whether he would join the Greenland expedition. He was then in high spirits, and quite thought he was equal to anything of the kind.

'But next morning when he woke up sober, and remembered what he had said, he repented bitterly. He thought then that it was too late to undo it all, but he would now give any amount of money not to have come with us at all. Poor fellow! I consoled him and Ravna as well as I could, though I must freely confess that their despondency and cowardice often caused me considerable annoyance. But as a matter of fact the poor fellows did not enter into the spirit of the undertaking at all. I do not feel sure whether my consolation was of much avail, but I have reason to think so. They used often to come to me after this, and appeared relieved when I gave them any information about the continent of Greenland,

and the drift of the ice, things of which they seemed to have little or no comprehension.

'Otherwise our spirits are excellent, and we are really comfortable as we sit here in the tent. One or two of us are reading, others writing their diaries, Balto is mending shoes, and Ravna, as usual, and as he prefers, is doing nothing. Nevertheless, our prospect of soon being carried out to sea again cannot be called entirely pleasant.

'In the afternoon it clears a little, the rain holds up, and we can see land, which looks quite as near as it did before.

'A little later we determine to push in through the ice. It is dangerous work, but we must make the attempt, as we are being carried towards the open sea at great speed. We make a good deal of way inwards, though we are in constant risk of getting our boats crushed. We have to keep all our wits about us if we are to get the boats into shelter when the ice packs. One time we take refuge at the very last moment on a thin little floe, which splits into several pieces under the pressure, though the fragment on which we stand remains intact.

'As the ice continues packed, we begin hauling, though this is no easy matter while this rolling goes on. The floes at one moment separate, at another are jammed together, and it is very difficult to get the

sledges safely from one to the other without losing them in the sea. Often we have to wait a long time before we can get back and fetch the rest of the train from the floe on which we have left it. By moving cautiously, however, we manage to push on at a fair pace. But it is all of little use. It serves to give us exercise, which is an important thing, but otherwise our work does little good. The sea works faster than we do, and there is every probability of our

HAULING AMONG THE HUMMOCKS

(By A. Bloch, from a sketch by the Author)

being carried out into the breakers again. Well, so let it be: but we must first find a good ship to carry us. We set about carefully surveying all the floes round us, and we now understand pretty well what the points of a good floe are. At last we find one, of solid blue ice, thick, but not large, and in shape something like a ship, so that it will ride the seas well, and without breaking across. It has high edges, too, which will keep the sea from breaking over it, and at the same time there is one lower place

which will let us launch our boats without much difficulty. It is without comparison the best floe we have been on as yet, and on it we propose, if we are driven out, to remain as long as we can stick to it, however furiously the breakers rage around us.

'Of course we had as usual made sure, before we decided upon this floe, that there were pools of water upon it. Such there are indeed on most of these floes, for the snow which covers the ice melts and provides the most excellent drinking-water, which collects in pools of larger or smaller size.

'Nevertheless we looked very foolish this time when we were filling our boiling-pot, and, happening to taste the water, found it was brackish. It had not struck us that most of the snow was now melted away, and that our water came from the underlying salt-water ice. However, on examining the highest points of the floe, where the snow still remained, we found plenty of good water.

'This evening we had an excellent cup of coffee and were all in high spirits. If anyone could have put his head into our comfortable tent and seen us encamped round our singing coffee-pot and carelessly talking about all sorts of trifles, it would never have struck him that these were men who were on the point of engaging in a struggle with ice, sea, and breakers, which was not likely to be altogether

a joke. But let us enjoy the moment, look just so far in front of us as is necessary, and for the rest leave the day to attend to its own evil.

'We are now just off the mountains of Tingmiarmiut. Along the whole of this magnificent coast of East Greenland one group of wild Alpine peaks succeeds the other, each more beautiful than the last. Really it is not so bad after all to lie drifting here in the ice. We see more of the coast and more of the beauties of nature altogether than we should have otherwise.

'To-night it is fine, still, and cold, with a bright moon, as it was yesterday.

'It must be that coffee which is making me sit out here and talk nonsense, instead of creeping into my sleeping-bag as I ought, in order to gather strength for the exertions of to-morrow. Good-night!

'*July* 27.—Did not go to bed after all till well into the morning. There is no doubt it was a clear case of coffee-poisoning.

'Walked about talking to Sverdrup through his watch and afterwards, recalling our school-days. Life and the world seem so strangely distant to us as we drift in the ice up here.

'*July* 28.—Yesterday we did nothing, and the same is the case to-day. Our fear of being driven

out into the breakers again was by no means groundless. Yesterday we were within much less than half a mile, and yet we almost wished to go, as by putting out to sea we should bring this life in the ice to an end. The sea was moderate and the wind fair, and we might thus have reached Cape Farewell within twenty-four hours. When there we should certainly have been able to push through the ice and get to land. However, we were not to go to sea after all. After we had drifted along the ice at its outer edge for a time, we began to move inwards in a field of floes, which seemed to extend away south. The ice-belt is here very narrow, and on taking our bearings upon several points on the coast we found that, though at the outer edge of the ice, we were not more than eighteen miles from land at Mogens Heinesens Fjord.

'The weather, which was yesterday bitterly cold with a wintry and clouded sky, is bright again to-day. The sun is shining warm and encouragingly down upon us. The "Inland ice" north and south of Karra akungnak lies stretched before us pure and white, looking to the eye a level and practicable plain, with rows of crags peeping through the ice—the so-called "*nunataks*"—away behind, more of them, by the way, than are marked on Holm's map. The expanse of snow beckons and entices us far into

the unknown interior. Ah, well! we too shall have our day.'

With this sanguine expression of confidence, which was perhaps remarkable considering the number of times we had been disappointed, my diary for this section of our journey curiously enough concludes. The next entry is dated July 31, and thus begins:—

'A strange difference between our surroundings now and those when I last wrote! Then they were ice, solitude, and the roaring of the sea, now they are barking dogs, numbers of native Greenlanders, boats, tents, and the litter of an encampment—in short, life, activity, and summer, and, above all, the rocky soil of Greenland beneath our feet.'

These lines were written as we were leaving the first Eskimo encampment we had come to, but before I continue from this point I had better explain how we managed to get so far.

On the evening of July 28, after having finished the entry in my diary which I have quoted above, we drifted into a fog which concealed the land from us. In the course of the afternoon the ice had several times opened considerably, though we were very near its outer edge, where one would have expected the swell to keep it packed close. It had not, however, opened to such an extent that we could safely take

the boats inwards, because of the rolling. But as some of us were taking the ordinary evening walk before turning in, we were struck by the way in which the floes were separating. It looked to us as if the ice were opening even out seawards, which was an extremely unusual sight. We felt we really ought to set to work, but we were tired and sleepy, and no one seemed at all inclined for such a proceeding. To tell the truth too, I was now quite tired of being disappointed in the way we had been, and was very strongly disposed to put straight out to sea. We had now so often worked inwards through open ice, and the only result of all our labour had been to get driven out to sea again. This time, thought I, we will see what happens if we sit idle instead of working. And so we crept into our bags, though leaving the usual man on watch with orders to call us out in case the ice opened still more.

In the night the fog thickened and nothing was to be seen of our surroundings. Sverdrup's watch came on towards morning. He told us afterwards that as he walked up and down in the fog and after a time looked at the compass, it struck him that he must have gone clean out of his wits. Either he or the instrument must have gone mad, for the black end of the needle was pointing to what he held to be south. For if he looked along the needle with the

black end away from him he had the breakers on his left. But if the end of the needle pointed to the north, as it ought, then the breakers must be on the west or land side. This could not be, so he must suppose that either he or the needle had gone crazy, and, as this is not a weakness to which compasses are liable, therefore the fault must lie with him, though it was a state of things which he had certainly never contemplated. Subsequently the phenomenon was explained in a somewhat different way, for the breakers he had heard proved to be the sea washing the shore.

In the morning I happened to be lying awake for a time. It was now Ravna who had the watch, and, as usual, he had kept at it for four hours instead of two. I lay for some time watching with amusement his bearded little face as it peeped through the opening into the tent. At first I thought he was wondering whether his two hours were not up and he might wake Kristiansen, who was to follow him. But then it struck me that to-day there was a peculiar, uneasy expression in this face, which was not at all familiar. So at last I said:—'Well, Ravna, can you see land?' And he answered eagerly in his queer, naïve way:—'Yes, yes, land too near.' Both the Lapps habitually used *altfor*, 'too,' instead of *meget*, 'very.' I jumped out of the bag and from the

tent-door saw land much nearer than we had ever had it before. The floes were scattered, and I could see open water along the shore. Ravna was indeed right; land was much too near for us to be lying idly in our bags. So I turned the others out, and it was not long before we had dressed and breakfasted. The boats were launched and loaded, and we were soon ready. Before we left this floe, which had carried us so well and was in all probability to be our last, I went up on to its highest point to choose our best course for land. Our surroundings were changed indeed. The whole field of ice seemed to have been carried away from land and outwards to the south-east. I could see nothing but ice in that direction, and there was that whiteness in the air above it which betokens large fields. Towards the south, on the contrary, and along the shore there seemed to be nothing but open water. We were not far from the edge of this water, and it stretched northwards also for some way along the coast, ending at a point where the ice seemed to lie close into the land. We were therefore now on the inner edge of the ice-belt, and the outer edge was not distinctly visible from where I stood. It is strange how quickly one's fate changes. It was quite plain that we should now soon be on shore, and, had this been told us yesterday, not one of

us would have allowed the possibility of such a thing.

So off we started and pushed quickly landwards. The water was open enough for us to row pretty well the whole way, there being only two or three places where we had to force a passage.

Some hours later we were through the ice. The feelings that possessed us as we took our boats by the last floe and saw the smooth, open water stretching away in front of us up to the very shore are scarcely to be described in words. We felt as if we had escaped from a long and weary imprisonment and now all at once saw a bright and hopeful future lying before us. Life was indeed bright and hopeful now, for when can it be brighter than when one sees the attainment of one's wishes possible, when uncertainty at last begins to pass into certainty? It is like the tremulous joy which comes with the breaking day, and when is not the dawn fairer and brighter than the full noontide?

CHAPTER X

THE ICE-BELT OF THE EAST COAST OF GREENLAND, AND SOME ACCOUNT OF PREVIOUS ATTEMPTS TO PENETRATE IT

At last, then, we had overcome our first difficulty. We had reached that east coast of Greenland which so many before us had sought in vain, though the attempt had cost us much valuable time and had brought us far to the south of the point at which we had hoped to land.

But before we go farther and set out upon the next stage of our journey, it will be as well to sketch the history of earlier attempts at the task which we had just accomplished, and to enumerate the explorers whose success or failure had in a greater or less degree helped to prepare the way for us.

The east coast of Greenland has, as many readers will know, been seldom visited. Most of those who have attempted to land have been stopped by the floe-ice which is drifted down by the polar current, and for the greater part of the year forms a compact belt of varying width along the whole shore.

The difficult navigation of this coast was well known to the old Scandinavians, as is plainly shown by the numerous accounts in the Sagas of voyages to Greenland and of wrecks in the belt of floes.

Thorgils Orrabeins-fostre, 998

Now and again some of these adventurous sailors succeeded in actually reaching land. Thus the 'Flóamannasaga,' the manuscript of which dates from about 1400, tells us that an Icelander, Thorgils Orrabeinsfostre by name, lost his ship at a northerly point of the coast of East Greenland in the middle of October 998, in an inlet which had sandy shores. It is significant that this is said to have happened in the autumn, which is in fact the only time when the coast is sufficiently free of ice to allow a ship to go ashore there.

We are told with a great deal of circumstance and detail how this same Thorgils, who had his wife and whole household with him, for three winters and three summers struggled for bare life on this inhospitable coast; how he fought his way southwards, and, after undergoing the most incredible hardships, finally brought a small remnant of his party round the southern point of the continent and reached the first Scandinavian colony on the western side.

There is much in this account which is so marvellous, and even impossible, that it must cast a

doubt on the genuineness of the whole narrative. But at the same time the description of the coast along which Thorgils passed, and of the various natural phenomena which he found there, corresponds so closely with the real condition of things that it is scarcely reasonable to regard the whole story as a mere fiction, since it shows at least that the narrator must have had a personal and extensive acquaintance with the coast which he describes.

'Kongespeilet' too, the old Norse treatise to which I have already referred in connexion with the history of 'ski,' makes it quite plain that our ancestors must have been thoroughly well acquainted with the East Greenland coast, and its accurate and particular description of the floes, the icebergs, and polar current would do credit to a geographer of the present day. It tells us how folk who have been wrecked in the ice-belt have saved themselves by travelling over the floes for four or five days to land, and it proves that our party cannot claim to be the first which has reached shore by dragging its boats over the drifting ice.

Soon after this remarkable treatise was written, Greenland was once more cut off from the outer world, and it was some two hundred years or more before the connexion was opened again. A number of attempts were then made to reach the east coast,

the most important of which shall here be shortly enumerated.

It is not certain whether any expedition was sent out before 1579 for the purpose of rediscovering Greenland. A proclamation of King Frederick II. to the Greenlanders, of April 12, 1568, shows that a certain Kristiern Aalborg was to have been despatched thither with one ship in that year, but nothing more is known of the undertaking. Negotiations in the same direction were afterwards conducted by the same king with a Russian ship's captain, Paul Nichetz, who claimed to know the route to Greenland, but no result seems to have been arrived at.

Kristiern Aalborg (?), 1568

Under earlier kings of Denmark and Norway the recovery of the lost Norwegian province had been often contemplated and much discussed. In the beginning of the sixteenth century, for instance, under Christian II., Archbishop Valkendorf determined to bring Greenland within the see of Trondhjem, but his project led to nothing.

In 1579 James Allday, an Englishman, was put in command of an expedition consisting of two ships, and was instructed to visit Greenland for the purpose of bringing that country once more under its lawful sovereign.

Allday, 1579

On August 26 they sighted the east coast, pro-

bably a little way to the north of Cape Dan, and then sailed to the south-west along the shore, but could not land on account of the ice. On August 29, however, they seem to have been within a mile or two of land, but could get no nearer, and had ultimately to put out to sea again. After this they saw no more of the coast, and were in the end forced by bad weather to make for home again. It seems that few expeditions up to the year 1883 have managed to approach the coast from the open sea so nearly as the first one. It is just at the end of August, as a rule, that Cape Dan becomes tolerably free of ice, though we found it to be so even before the middle of the month.

Allday, however, thought that he was too late in the season, and in the following year a new expedition was got ready and put in his charge. This expedition seems to have led to nothing, as there is no further mention of it.

Allday (?), 1580

In 1581 Mogens Heinessön, the adventurous hero of the Faroe Islands, fitted out a ship at his own cost for the purpose of recovering the forgotten province. But, bold and skilful sailor as he was, he could only come within sight of the shore, and failed, owing to the ice, to effect a landing.

Mogens Heinessön, 1581

The expeditions which were sent out in 1605

under the Scotchman John Cunningham, who had the chief command, the Englishman James Hall, chief pilot, and John Knight, together with the Dane Godske Lindenow, and that of 1606, of which Lindenow had the chief command, seem, as far as we can judge from the scanty records extant, to have made no attempt to land on the east coast. The view that Lindenow landed at some point at the south of the east coast on the first of these voyages seems to me to be scarcely tenable.

Cunningham, 1605

Lindenow, 1606

On the west coast, on the other hand, both these expeditions landed. They brought back, however, very little in comparison with what had been expected of them, for the reason that, as was generally supposed, they had not found the flourishing 'Österbygd,' and thither the attention of explorers was now chiefly directed.[1]

[1] The first expeditions which made their way to the east coast were sent out only for the purpose of rediscovering Greenland, but gradually, as no Scandinavians could be found upon the west coast, the search was directed specially to the particular colony known as 'Österbygden,' or the 'Eastern Settlement,' which had not yet been discovered, and which, it was thought, must necessarily lie on the southern point of the peninsula or on its eastern side.

In his instructions to the expedition of 1607, King Christian IV. sets forth that Eriksfjord, one of the 'Österbygd' fjords, 'lies to the south-west of the country between the 60th and 61st parallels, but over against the eastern side.' The expedition was ordered to make for the south-eastern point of the land, and, after the 'Österbygd' had been found, to work northwards along the east coast for the purpose of examining it.

In 1607 another expedition was despatched from Denmark under the Holsteiner, Carsten Richardsen, with James Hall as pilot, to find this lost colony. So sure were the promoters of this undertaking of success, that they even had Icelanders and Norwegians on board, who were to serve as interpreters when the descendants of the old Norwegian settlers were found.

Richardsen, 1607

On June 8 the coast seems to have been sighted in lat. 59° N., but the landing was prevented by the ice. The expedition then sailed northwards, and tried again and again to force a passage through the floes. A last desperate attempt was made between lat. 63° and 64° N. on July 1, but as this also failed, the course was set for home.

In 1652, 1653 and 1654, three expeditions were fitted out by the Dane, Henrik Möller, and put in charge of a foreigner, probably a Dutchman, David Danell or de Nelle.

In 1652 Danell sighted the east coast,[1] probably near Cape Dan, on June 2, but neither on that nor the following days could he land on account of the ice, which lay from twenty to thirty miles out to sea. On June 9 they tried to find 'a harbour,' which must

[1] As the earlier expeditions to the east coast had failed, Danell took a more northerly course in the hope of hitting upon the old Scandinavian route known as 'Eriksstevne,' which lay due west from Iceland.

have been to the south of Cape Dan, but there was ten miles of ice in 'the harbour' and along the shore. Thereupon they took out a boat and attempted to get across, but the ice began 'to break,' and 'the enterprise had gone near to bring them all to perplexity.' Then they sailed southwards; but as they found all approaches to the shore blocked by the ice, they rounded Cape Farewell about the middle of June and went on to the west coast.

Danell, 1652

In his diaries Danell describes a number of islands which lay fifteen or twenty miles from land to the south of Cape Dan; one of them he even names 'The White Saddle,' and another 'The Mastless Ship.' From his description these were evidently icebergs, which for want of experience he had mistaken for land.

On his return from the voyage towards the end of June, Danell made one more attempt to reach the east coast, and this time, as it seems, he came very near to success. On July 23 they found themselves off the mouth of a fjord or inlet which was free of ice, and 'if the night had not fallen so suddenly upon them they would have sailed into this fjord.' Farther north again, at lat. 63° N., they came within five miles of land, and saw what Danell calls 'the solid ice.' His descriptions, on the whole, show that at that time

the condition of the ice in June and July was just the same as it is to-day.

Danell, 1653

In June of the next year, 1653, Danell again cruised along the east coast to Cape Farewell, but was everywhere prevented by the ice from approaching land. On June 19, in lat. 64° N., he supposes himself to have seen the Herjulfsnæs of the old Norsemen, where the ice stretched twenty or twenty-five miles out to sea.[1] Then he proceeded to the west coast, and it is not known whether he made any attempt upon the east side on his way back in the beginning of August. We are only told that, as the east coast was blocked by ice, he resolved to go to Iceland.

Danell, 1654

In 1654 Danell was once more off the east coast, but this time it was a long way to the south, and it seems probable that he was only passing by on his way to the west. Very little is known about the voyage, except that off Godthaabsfjord they saw 'a mermaid with streaming hair and exceeding lovely.'

In 1670 a ship's captain, named Otto Axelsen, was sent out by the King of Denmark to recover the

[1] It is not easy to see what induced Danell to give this position to Herjulfsnæs. His error may, to some extent, have misled Theodor Thorlacius, who, by deliberately putting 'Österbygden' on the east coast of Greenland in his map of 1668 or 1669, helped to establish a mistake which led people astray for many years to come.

old province of Greenland. He returned the same year, but there is no record of his voyage. Next year he was sent again, but this time he did not return. We can only suppose that his vessel must have been crushed in the ice in an attempt to reach the east coast.

Axelsen, 1670 and 1671

A considerable interval followed without any fresh attempts; but early in the next century the Danes, together with the Norwegian missionary Hans Egede, settled upon the west coast of Greenland. They had not even yet found any descendants of the old colonists, but they still had hopes of doing so on the east coast, where they now were convinced that the 'Österbygd' must have been. Egede himself, as I shall subsequently relate, even made an attempt to work up along shore in an Eskimo boat.

A report dated August 29, 1724,[1] shows that the Bergen company which sent Egede out had given Captain Hans Fæster of the 'Egte Sophia,' one of their own vessels, orders 'to seek and examine the east side of the country of Greenland; but as this coast, from 66½° to 60°, was everywhere blocked by ice, the scheme has not succeeded as well as had been wished and hoped for.' On May 12 the vessel reached the coast of Greenland, and for three

Fæster, 1724

[1] *Meddelelser om Grönland*, vol. ix. pp. 28, 29 (Copenhagen, 1889).

months seems to have cruised along the edge of the ice from lat. 66° 30′ to 60° 28′ N., and to have been distant from the shore 'sometimes five miles, sometimes ten, sometimes fifteen, sometimes twenty, and sometimes twenty-five, but to have found no approach or opening.'

It was to find this same 'Österbygd' too that, on the proposal of Hans Egede's son Paul, two vessels were fitted out in 1786 and put in charge of 'Captain-Lieutenant' Paul de Löwenörn.

De Löwenörn, 1786

On July 3 of this year the expedition sighted land between lat. 65° and 66° N., a white rocky coast, which was in view all that day and the morning of the next. Löwenörn, however, seems to have been frightened by the drifting floes and withdrew from 'Greenland's icy coast,' some days later returning to Iceland, where he lay at anchor for some time in Dyrafjord. This was the only time he came within sight of the coast. On July 23 he left Dyrafjord again; but as he reached the pack-ice the very next day, he seems to have abandoned all hope at once, and presently returned home to Denmark with the larger of his two vessels. Though this ship had previously been a whaler, and was therefore built for these very seas, Löwenörn managed to see less of the east coast than many of his predecessors. He seems to have

had no partiality for the pack-ice, but it may be urged in his excuse that as a naval officer he had had no experience in this kind of navigation.

When he went home for good, however, he left his smaller vessel, a sloop named 'Den nye Pröve,' in charge of Second-Lieutenant Christian Thestrup Egede, a son of Bishop Paul Egede, to make further attempts upon the east coast.

What Löwenörn wanted in the way of courage and enterprise, Egede seems to have possessed to the full, and with all the enthusiasm of youth he set himself to realise the dream of his father, the rediscovery of the lost settlement. On August 8, the very day on which Löwenörn sailed for home, he put to sea with his little vessel to make one more serious attempt to reach the shore.

C. T. Egede, 1786

On August 16 he sighted some point in all probability to the north of Cape Dan, but could not land on account of the ice, which extended some thirty miles out to sea. On August 20 they were farther south and off the mouth of some broad inlet, which was no doubt Sermilikfjord, but here again they were prevented by ice from getting within less than twelve miles of land. A series of storms, which at last forced them to return to Iceland, put an end to their attempts for the season.

In 1787, however, Egede and Rothe, his second

in command, made no less than six attempts upon this inaccessible coast; but, though they had the company of another vessel, they only managed to sight land on one occasion. This was on May 17 and 18, when they came within twenty-five or thirty miles of shore somewhat to the north of Cape Dan.

Egede and Rothe, 1787

Their last try was in the latter half of September. It must seem strange to us, with our present knowledge of the ways of the ice, that they failed to land so late in the season, but the reason no doubt was that they were too far to the north and east, and that they were to some extent hindered by storms and foggy weather.

Nearly fifty years later, or in 1833,[1] Lieutenant de Blosseville, a French naval officer, on July 28 and 29, sighted the east coast between lat. 68° and 69° N., but was prevented from landing by the ice, and returned to Iceland at once to make good some damage which his ship had suffered. On August 5 he put to sea again, but nothing has been heard of him since.

De Blosseville, 1833

In 1859 the American, Colonel Schaffner, sailed

[1] As we are here only concerned with the southern part of the east coast, I say nothing of the various explorers who have visited the northern part, such as Scoresby, Sabine and Clavering in 1822 and 1823.

to Greenland in the bark 'Wyman' to inquire into the practicability of carrying a telegraph cable from Europe to America over Greenland. On October 10 he left Julianehaab and sailed round Cape Farewell and up the east coast to Lindenow's Fjord in lat. 60° 25′ N. He found 'not so much as a hand's breadth of ice,' which is not remarkable, as at this time of the year the coast is generally quite free. However, he was hindered from landing or anchoring by a storm from the north, which drove the vessel out to sea.

Schaffner, 1859

On July 18, 1860, with the same object in view, Sir Leopold McClintock with the 'Bulldog' arrived off the coast by Cape Wallöe in lat. 60° 34′ N., but could not land on account of the ice. He then went round to the west coast, and thence to America. After calling at Julianehaab, on his way home he made one more attempt on the east coast, and came within some five miles of land in lat. 60° 2′ N. by Prince Christian's Sound. Here he found very little ice, but the same night a violent storm sprang up, which lasted three days and carried the 'Bulldog' seawards.

McClintock, 1860

On September 11 of the same year (1860), Colonel Schaffner, this time on board the 'Fox,' which was under the command of the Arctic explorer Sir Allen Young, came again to the east coast

Young, 1860

of Greenland. The 'Fox' reached the coast near Cape Bille in lat. 62° N. or thereabouts, and, as I learn from Sir Allen Young, they found so little ice here that for that matter they could have landed easily, but they seem not to have been within ten miles of shore. On September 12, on the contrary, they found the ice at lat. 61° 54′ N. lying close inshore and tightly packed. On September 13 again they were within some three or four miles of land off Omenarsuk, but here also the ice lay too close to afford an opening. The darkness of the air over Lindenow's Fjord led Sir Allen Young to suppose that they might have found open water and anchorage under the shore. As a storm, however, sprang up in the evening he put to sea again and made no further attempt upon the east coast.

In 1863 two iron steamships, the 'Baron Hambro' and the 'Caroline,' were sent out on behalf of an English house of business with the object of founding a trading-station on the east coast. The expedition, which was in charge of the English traveller Taylor, found the coast blocked by ice, into which they dared not take their iron vessels.

Taylor, 1863

In 1865 Taylor came again with the 'Erik Raude,' a strong wooden vessel specially built for the ice. This time also he found the coast at about lat. 63° N. completely blocked,

Taylor, 1865

and, in spite of vigorous efforts, he failed to break through the ice-belt.

In 1879 the schooner 'Ingolf,' of the Danish Navy under Captain A. Mourier and Lieutenant Wandel, cruised down the coast. They were in lat. 69° N. on July 6, and in the neighbourhood of Cape Dan on July 10. Off Ingolfsfjeld they were within about twenty miles of shore, but could not land. After this expedition Captain Mourier came to the conclusion that it was altogether impossible to reach the east coast from the sea.[1] The incorrectness of this conclusion was, however, proved four years later.

Mourier, 1879

In 1882, as I have already said, I was off this coast on board the sealer 'Viking.' We were caught in the ice on June 25, between lat. 66° and 67° N., and drifted landwards till on July 7 in lat. 66° 50′ N. and long. 32° 35′ W. we believed ourselves to be within some twenty-five miles of shore. After this we drifted gently in a south-westerly direction, and finally came out of the ice on July 17.[2]

The 'Viking,' 1882

In 1883 Baron Nordenskiöld made two attempts

[1] Kapt. A. Mourier: *Orlogsskonnerten 'Ingolfs' Expedition i Danmarksstrædet i* 1879. In *Geografisk Tidskrift*, vol. iv. p. 59 (Copenhagen, 1880).

[2] *Langs Grönlands Östkyst.* In *Geografisk Tidskrift*, vol. vii. pp. 76–79 (Copenhagen, 1884).

to reach the east coast with the iron steamship 'Sofia.' On June 12 he sighted Cape Dan, but being unable to land changed his course and cruised along the coast southwards. The whole way down to Cape Farewell, which was reached on June 15, the shore was blocked by ice. Nordenskiöld therefore went round to the west coast, where he made his second expedition to the 'Inland ice,' which will be described in a later chapter.

Nordenskiöld, 1883

On August 30 he passed Cape Farewell again on his way back, and on September 1 he found to the south of lat. 62° N. a great field of closely packed ice, which stretched far out to sea from the glacier Puisortok to a distance of thirty or thirty-five miles. To the south of this great tongue of ice there seemed to be open water close under the shore. When they came nearer, however, they found a belt of floes, though it was only six or seven miles broad. This Nordenskiöld thought they could have pushed through without any very great difficulty, but, as the coast here was supposed to be uninhabited, he did not make the attempt.

It would seem that the general aspect of the ice here—a long tongue extending far out to sea and a narrow belt along the coast to the south—was remarkably like what we found afterwards[1] at about the

[1] See pp. 272 and 310.

same point, or, more correctly, a little farther south. At this part of the coast there must therefore be, at least at times, some strange irregularity in the course of the current.

A little to the north of lat. 62° N. there was a long inlet going far into the ice towards shore, but at the head of this the way was again blocked by a narrow belt. As Nordenskiöld wished to land farther north, he did not try to force his way through the belt, though he considered that he could have done so without any particular difficulty.

At last, on September 4, Nordenskiöld succeeded in achieving what so many before him had attempted to do in vain, and the 'Sofia' was brought safely in to land after passing through what seems to have been comparatively open ice. This was just to the west of Cape Dan, and the ship was anchored in a bay, which was thereupon named 'Konung Oscars Hamn.' On this day and the following morning the party were on shore, where they made various collections and observations for scientific purposes. Numerous and quite recent traces of the natives were found, though no individuals were seen, which was very remarkable, seeing that the party landed, as we now know, in the middle of an inhabited section of the coast. Nor apparently was anything of the ex-

pedition seen by the Eskimo, though they very soon found and appropriated one token which recorded this mysterious descent upon their coasts. This was an empty beer-bottle from the Carlsberg Brewery at Copenhagen, which the Greenlanders afterwards showed to Captain Holm as something exceeding strange and supernatural. To the few drops of yellow liquid which still remained in the bottom of the bottle qualities of divine power seem to have been ascribed.

On September 5, or the day after the landing at Konung Oscars Hamn, the 'Sofia' put to sea again in the hope of reaching the coast to the north of Cape Dan. This attempt, however, was not successful, and, owing to want of coal, the expedition was now forced to return.

In 1884 things were ususually favourable on the east coast of Greenland, and in the first half of July, as I learn from trustworthy sources, many of the Norwegian sealers were very close to land in lat. 67° N. or thereabouts. One of them indeed, the 'Stærkodder' under Captain A. Krefting, took bladder-nose seal close under the shore, which, according to the captain's account, he could easily have reached had it been in the interest of his ship.

Norwegian sealers, 1884

The last of the long series of attempts upon this

coast is, as the writer hopes, already well known to the reader, and there is no further necessity for him to draw attention to its history.[1]

There are, however, in connexion with the Greenland ice-belt, two other occurrences which I can scarcely pass over in my enumeration, though they do not strictly belong to the series of attempts to reach the shore. But they are nevertheless in some way the forerunners of our voyage in the floe-ice, though in the matter of hardship and suffering we went through nothing that can for a moment be compared with the experiences of these our predecessors.

Tragedy of 1777

The year 1777 must be a date branded upon the memory of all who have studied the history of Arctic research, which among all its cruel records has no such tale of wholesale misery as this one year produced.

It was, on the whole, a very bad season for navigation on the Greenland coasts; and at midsummer, or rather between June 24 and 28, a whole fleet of whalers of various nationalities, and twenty-seven

[1] It is possible that the coast has been reached by more people than we know anything of. There is indeed a story current in Iceland that some fishing-vessels in 1756 anchored on the east coast of Greenland at some point north-west of Vestfirdir in Iceland. This legend, however, is not very trustworthy. (See *Geografisk Tidskrift*, vol. vii. pp. 117 and 176.)

or twenty-eight in number,[1] were caught fast in the ice between lat. 74° and 75° N.[2] Some of these ships worked free again in the course of the following months, but twelve remained fixed and drifted southwards along the coast, to be crushed between the floes and sunk one after another.[3] The first loss was on August 19 and 20, when six vessels went down at about the same spot, or between lat. 67° 30′ and 68° N., and some fifty miles from shore. The rest floated steadily southwards, generally at a distance of forty or fifty miles from the coast, and nearly always within sight of it. At the end of September they were between lat. 64° and 65° N. The last of them was crushed on October 11, some thirty miles from land, in lat. 61° 30′ N., or just off Anoritok, the place where our own drift ended.

The distance this last survivor had drifted since she was first caught in the ice was about 1,250 miles;

[1] They were probably nine Hamburg vessels, eight English, seven Dutch, two Swedish, one Danish, and one from Bremen.

[2] At this part of the coast ships have often been caught in the ice, though not with such tragic results as in this case. In 1769, for instance, four ships are said to have been caught in the beginning of July at about lat. 76° N., and drifted down to lat. 69° N., which they reached on November 16 and 19. Two of these vessels then worked free, while the other two disappeared from history.

[3] Of these twelve, six seem to have been Dutchmen and six Germans from Hamburg, while their crews consisted to a large extent of Danes from the islands off the west coast of Jutland and Sleswig, as well as from Holstein.

the voyage lasted 107 days, and the average rate of progress was therefore rather less than twelve miles in the twenty-four hours. During the latter part, however, the speed had been considerably higher than this, as from the end of September onwards it was as much as twenty miles a day.

The crews of the ships, as they sank, generally took refuge on board the survivors, though some of them also took to the floes and remained there. The whole body of them drifted on, their sufferings and hardships continually increasing. Many of them died by degrees, some by drowning, some of cold, but most of starvation, for as a rule little had been saved from the wrecked ships, which had been ill enough victualled in the first instance.

On the last ship as many as 286 men had gradually accumulated. Their need was extreme, and at the end the whole daily ration consisted of ten spoonfuls of porridge. In the beginning of October, twelve men off this ship tried to cross the ice to land in lat. 63° N. They actually reached an island, but as they could not cross to the mainland they returned. This party may therefore be considered the first who in modern times have made their way to the east coast of Greenland from the sea.[1]

[1] Of one party of 160 men who had been obliged to take to the ice and boats as early as September 30, in lat. 64° N., twenty-four tried to make for the coast at about lat. 63° N., but apparently without success.

After the wreck of the last vessel, most of the men on board remained together on the ice. But as they saw that, if they all made their way to any settlement in one body, it would be impossible to provide food for them, they divided into several parties. One of these sections is said to have pushed along the coast northwards, and another and larger party to have left the coast with the idea of crossing by land to the west, but of neither of these has anything ever been heard. A third body of fifty went on along the coast southwards, and to the north of Cape Farewell, probably at Alluk, they met with Eskimo, who received them kindly, provided them with food, and sent them on in skin boats, in which they eventually found their way to the Danish colonies. A fourth party, also containing about fifty men, drifted on in the ice round Cape Farewell without trying to land, and after many sufferings and in reduced numbers reached the west coast, some at Fredrikshaab, others near Godthaab.

Of the rest of the crews, who had never been on the last vessel, various small sections floated down on the ice to Cape Farewell, and made their way in their boats to the colonies during October and November. The most noteworthy voyage was made by a small party of six men, who landed to the north of Godthaab. These men had saved two boats and

nearly all the provisions from their vessel when she sank, and remained on the ice in preference to taking refuge on another ship. Subsequently they took to the open sea, rowed and sailed along the ice round Cape Farewell, until at last, after enduring all sorts of hardships, they reached a little rock to the north of Godthaab and about two or three miles from the mainland. Where they were they had no notion, but on this rock they resolved to stay and winter. They lived on the provisions they had with them, and out of the sails and oars built a hut, but they suffered much from cold and want of water, while in stormy weather the sea broke so heavily over their rock that they were in constant danger of drowning. At last, at the end of March, some Greenlanders found them and took them in to Godthaab. These six men must have travelled nearly 800 miles on the ice or in their open boats.

Of the whole number that manned these unfortunate ships, some 320 men never returned home, while about 155 made their way to the west coast of Greenland, and were thence shipped back to Europe. That they were all hospitably received by Eskimo and Danes alike is a matter of course.[1]

[1] Julius Payer, in his very inaccurate account of this occurrence (*Die österreichisch-ungarische Nordpol-Expedition in den Jahren* 1872-1874, Vienna, 1876, p. 481) would lead the reader to suppose that the sailors who were saved—by a strange error he makes them twelve in number

Another voyage along the same ice-belt, almost as remarkable as the last, though in no degree so tragic, was that of the 'Hansa' crew in the winter of 1869 and 1870. The 'Hansa' was one of the two vessels commissioned to set the so-called 'Second German North-pole Expedition' on shore on the northern coast of East Greenland.

The 'Hansa,' 1869–1870

In the attempt to force the ice the 'Germania,' the other of the two vessels and a steamship, pushed safely through, while the 'Hansa,' a sailing-vessel only, under the command of Captain Hegemann, was completely caught on September 6, at about lat. 74° 6′ N. and long. 16° 30′ W., or very near the same spot where the whalers were caught in 1777, this being some fifty miles from land. The vessel then drifted steadily southwards at comparatively little distance from shore until, on October 19, she was crushed and went down in lat. 70° 50′ N. and long. 20° 30′ W., not far from the so-called Liverpool coast. The necessary provisions were saved, however; and as it was resolved to remain on the ice rather than

—were badly received and treated on the west coast and after they returned to Europe. This view lacks every ground of probability, and it has furthermore been vigorously opposed and, it is to be hoped, refuted for ever by Captain C. Normann in his elaborate article upon the same subject in the *Geografisk Tidskrift*, vol. ii. pp. 49-63 (Copenhagen, 1878). In this he gives a comparison of the many older accounts of the occurrence, and from his study most of my own notice is taken.

attempt to reach the shore, a hut of coal was built on a floe. In this the crew passed the winter, drifting meanwhile steadily down the coast, until on January 15, and in lat. 66° N., the floe during a storm split in two just under the hut itself, and the men had to take to the boats. Subsequently, a smaller hut was built on a neighbouring floe. Amid a variety of experiences the party drifted on till on May 7, in lat. 61° 12′ N., or thereabouts—again not far from Anoritok—they found they could leave the floe and make their way to shore in the boats. The circumstances of their landing were astonishingly like those of ours on July 29. On May 6 they had no notion that they would be able to leave the floe so soon, and were no little surprised next day to find open water stretching away towards land. Furthermore, they found that they had then drifted some nine miles to the north since the day before. We too, as the reader may remember, apparently drifted very little to the south during the night preceding our escape from the ice, so in both cases there must have been certain irregularities of current just at this spot.

But though they left their floe on May 7, the 'Hansa' crew did not reach the coast till June 4, when they landed on the island of Huilek, which lies in about lat. 60° 57′ N. Hence they pushed on

southwards, and finally the three boats, with the whole crew of the vessel intact, arrived at the Moravian missionary station of Friedrichsthal, to the west of Cape Farewell, on June 13.

The whole distance which these men drifted from first to last, from the time that their vessel was caught in the ice in September 1869 to the day on which they left the ice-floe for the boats, was almost exactly the same as that traversed by their predecessors in 1777—that is to say, about 1,250 miles. This voyage lasted about eight months, or 246 days, which gives a daily average of rather more than five miles, or less than half the speed attained on the earlier occasion. The reason of this is perhaps to some extent because the current may not be so strong in the winter, and also because they were not very far from shore. The month in which the 'Hansa' crew drifted fastest was November, when their average speed was nearly nine miles a day. At this time they were still north of Iceland.

If these two averages, twelve miles a day in 1777 and five miles a day in 1869, be compared with the rate at which we travelled during our eleven days' drift, which was as much as thirty miles in the twenty-four hours, the difference is very remarkable. On most days, indeed, we drifted little less than thirty-three miles. One reason of this differ-

ence probably is that during the summer the current has considerably more speed than at any other season of the year, and another the fact that the 'Hansa' crew were well in the middle of the ice-belt, while we were on its outskirts. The crews of 1777 too, as I have said, drifted much faster during the latter part of their voyage, as to the south of lat. 64° N. they had a daily average of between nineteen and twenty miles.[1]

One remarkable circumstance in connexion with the current between lat. 61° and 62° N. I have already had occasion to remark upon more than once.[2] Here there often seems to be some irregularity of speed and direction, which may possibly be due to the fact that an arm from some stream travelling northwards here meets the great Polar current and disturbs the general order of things by forcing a tongue of ice out to sea.[3] It appears to

[1] It would appear that the strength of the current just to the north of Cape Dan is considerably less than that in the neighbourhood of the Cape and further south. Among the Norwegian sealers who frequent Denmark Strait it is also an accepted fact that the stream runs faster the nearer one comes to Cape Dan. As I have already said several times, I was on board the sealer 'Viking' in 1882, when she was fast in the ice for twenty-three days, about lat. 67° N., but all this time our drift was inconsiderable. Several other Norwegian sealers have been caught in the ice in the same latitude for longer or shorter periods, but, as far as I can learn, they have not drifted to any serious extent.

[2] See pp. 290, 294 and 299.

[3] See pp. 272 and 290.

me too very probable that the Polar current along all the southern part of the coast, or below lat. 69° N., is subjected to periodic modifications, which may possibly be largely due to changes in an oppositional stream with a northerly direction, which obtrudes arms into it and causes divergences of greater or less extent.

None of the expeditions or voyages with which we have been so far concerned have done very much to contribute to our knowledge of the east coast of Greenland.

The knowledge that is now available with regard to the more southerly portion of the long coast, that portion up which our boats were now about to work their way, is due mainly to the efforts of two other expeditions. Without their experience to guide us, and especially without the help of the latter of the two, it would hardly have been possible for us to make satisfactory progress.

When Danell's voyages in the middle of the seventeenth century had proved, as people then thought, the impossibility of landing on the east coast from the open sea, attention was naturally drawn to the other alternative of starting from the west coast and working up along shore within the ice-belt. Proposals to this end were made about the

year 1664 by P. H. Resen, and again in 1703 by Arngrim Vidalin.[1]

As I have already said, Hans Poulsen Egede, the Greenland missionary, held the common belief that the settlement of Österbygden lay on the east coast, since he could find no descendants of the old Scandinavians on the west side. So in 1723 he started with two boats from what is now the colony of Godthaab, with the intention of rounding Cape Farewell and working upwards. He got no farther than Nanortalik in lat. 60° 8′ N., on the west side of the cape, where on August 26 he was obliged to turn back owing to the lateness of the season and an insufficiency of provisions. He nevertheless still considered that the east coast would be best reached in this way, by working up close in shore, and perhaps by the use of ordinary Eskimo skin-boats.

H. Egede. 1723

A little later, or in 1733, a similar attempt was made from Godthaab by Mathias Jochimsen, who was, however, stopped by ice in lat. 61° N. on the west side.

Jochimsen. 1733

A far more successful journey was made by Peder Olsen Wallöe, a Bornholmer by birth, who was settled as a merchant in Greenland for many years. In August 1751, Wallöe left Godthaab in a native boat with a crew of four Eskimo.

Wallöe, 1751 and 1752

[1] *Meddelelser om Grönland*, vol. ix. p. 26 (Copenhagen, 1889).

women and two Europeans. The first year he reached what is now the District of Julianehaab, where he made certain explorations and spent the winter. The next year he passed Cape Farewell and worked a little way up the east coast to an island which he calls Nenese, and which seems to lie in lat. 60° 56′ N. Here on August 6 he was obliged to turn back.

Wallöe is the first European who is known with certainty to have landed on the southern part of the east coast. He reaped little profit from his enterprise and perseverance, as he afterwards lived in Denmark in the most miserable circumstances, and died in 1793, at the age of seventy-seven, in the almshouse of Vartov at Copenhagen.

Towards the end of last century it was clearly shown by Eggers that the missing and much-sought-for settlement of 'Österbygden' must after all have been on the west coast and not on the east, and that its transposition to the wrong side of the country was due to the learned men of the past, who had completely misinterpreted the old Norse narratives.

This discovery, however, did not deprive the forlorn east coast of its interest, and in the year 1829–30 the Danish naval officer, Lieutenant W. A. Graah, made his memorable voyage of exploration up along the land in native boats, which were chiefly manned by Eskimo women.

Graah, 1829–1830

The east coast was reached on April 1, and on June 20, in lat. 61° 47′ N., Graah boldly resolved to send his European companions back and go on alone with one boat and six Greenlanders. A week later, when in lat. 63° 37′ N., he was abandoned by all the natives but three girls, whom he with difficulty persuaded to go with him as rowers. On July 24 he reached his northernmost camping-place, an island in lat. 65° 13′ N., to which he gave the name of 'Vendom,' or 'Return.' On August 18 he raised a cairn of stones on the island Dannebrogsö, which lies in lat. 65° 19′ N. and was the most northerly point he reached. Here further progress was stopped by the ice.

On August 21 he set out upon the return voyage, and on October 1 went into winter quarters at what he calls Nukarbik, but is now known as Imarsivik, in lat. 63° 22′ N.

During the winter he had much privation and sickness to contend against, though when spring came he made another attempt with undiminished courage to advance northwards. On July 25, however, he had to turn back again after going through the most extraordinary hardships, and this time without having advanced so far as the year before. At last, on October 16, he brought his difficult and adventurous voyage to an end at Fredrikshaab.

This remarkable journey provided science with a

mass of information as to the east coast of Greenland as far as the 65th parallel. On all this coast Graah, however, found no traces of Scandinavian occupation, and herewith the impossibility of the old settlement having been situated on this side of the peninsula seemed established. The only token of European life which he came across was a cannon found at Koremiut in Narketfjord, in lat. 61° 17′ N. This was probably a waif from some ship which had been caught in the ice and had drifted down the coast.

Nevertheless, many years afterwards, or in 1881, a Scandinavian ruin was actually discovered by the Moravian missionary Brodbeck at Narsak on the northern side of Lindenow's Fjord or Kangerdlugsuatsiak, in lat. 60° 30′ N., on the occasion of a journey in a native boat which he undertook along this part of the coast. This ruin, to which attention had been called early in the century by Giesecke, who knew of it from the reports of the Eskimo, is the only remnant of the kind that has been found upon the east coast.

Brodbeck, 1881

The last and most important expedition along these shores is that to which I have already incidentally referred in my opening chapter, and which is known as the Danish 'Konebaad' Expedition under the leadership of Captain G. Holm. This expedition lasted from 1883 to 1885, and, like

Holm, 1883–1885

that previously conducted by Graah, was organised by the Danish Government. It was also in connexion with the systematic geological and geographical investigations carried out in Greenland since 1876.

In addition to Captain Holm, the expedition consisted of his own countrymen, Lieutenant Garde, also of the Danish Navy, and Peter Eberlin, botanist and geologist, together with the Norwegian geologist, H. Knutsen, and two Danish Greenlanders, the brothers Petersen, as interpreters. All the travelling was to be done in 'umiaks,' or native skin-boats with Eskimo crews, as the Danes had gradually come to the conclusion that only in this way could the shore-ice and water be successfully navigated.

The first summer the whole party, who were distributed among four skin-boats and ten 'kayaks,' advanced as far as Iluilek, in lat 60° 52′ N., which they reached at the beginning of August. This was made a depôt for the coming year, and then, on August 10, the expedition returned to their head-quarters, Nanortalik, to the west of Cape Farewell, where they spent the winter.

Next year, 1884, four boats and seven 'kayaks,' with thirty-one natives in addition to the Europeans, set out upon the coast voyage, but on July 18 a portion of the whole body were sent back from Karra akungnak.

On July 28 Tingmiarmiut was reached, but here half the expedition were sent back under Lieutenant Garde to Nanortalik for the purpose of exploring the coast on the way.

Captain Holm, with the remainder, which consisted of Knutsen, Johan Petersen, and two Eskimo men and six women to man the two boats, left Tingmiarmiut on July 30. On August 25, or a whole month later than Graah, they reached Dannebrogsö, his most northerly point. On September 1 they arrived at Angmagsalik by Cape Dan, where they found a tract inhabited by no less than 413 natives, and which they made their winter quarters.

Next summer, or in 1885, they started southwards again on June 9, and at Umanak, in about lat. 63° N., they met on July 16 the rest of the expedition, who had come up from the south. On August 18 the whole party were once more at Nanortalik, whence shortly afterwards they returned to Denmark.

The scientific results of this expedition were of surprising importance; the east coast had now been thoroughly explored as far as lat. 66° N., both ethnographically and geographically, and the accurate maps which were the result were the main reason why we were enabled to push our way northwards with certainty and little loss of time.

CHAPTER XI

THE EAST COAST OF GREENLAND

The first thing we did when we were through the ice was to look for the nearest land. We wanted to feel the Greenland rocks beneath our feet as soon as possible, and, besides, I had long promised chocolate and a Sunday dinner for the day we first touched dry land again.

Almost opposite to us, and nearer than anything else, was the high rounded summit of Kutdlek Island. It would, however, have taken us too much out of our way to put in here, as we were going north. So we steered across the open water to the more northerly island of Kekertarsuak.

On the way we passed under a huge iceberg which lay stranded here in the open water. On its white back sat flocks of gulls, strewn like black dots about its surface. As we went by, a big piece of ice fell crashing into the water, and crowds of seabirds rose and wheeled round us, uttering their monotonous cries. This was all new to us. To have living creatures about us again was cheering indeed, while it

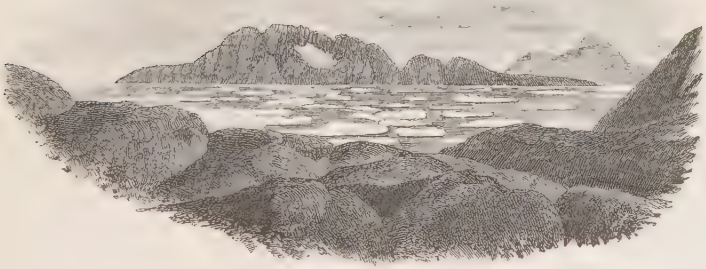
was even still more grateful to be able to row unhindered through all this open water.

As we advanced, however, we found that we had still some obstacles to pass before reaching land, as there was another belt of ice stretching southwards parallel with the shore. But it was of no great breadth, and, as the ice was fairly open, we forced our way through without much trouble. At last our boats, flying the Norwegian and Danish flags, glided under a steep cliff, the dark wall of which was mirrored in the bright water, and made it nearly black. The rock echoed our voices as we spoke, and the moment was one of extreme solemnity. Beyond the cliff we found a harbour where we could bring our boats ashore. Then we scrambled out, each striving to get first to land and feel real rocks and stones under his feet, and to climb up the cliffs to get the first look round. We were just like children, and a bit of moss, a stalk of grass, to say nothing of a flower, drew out a whole rush of feelings. All was so fresh to us, and the transition was so sudden and complete. The Lapps ran straight up the mountain side, and for a long while we saw nothing more of them.

But as soon as the first flood of joy was over we had to turn to more prosaic things, that is to say, our promised dinner. The cooker was put up on a rock down by the boats, and the chocolate set under way.

Plenty of cooks were ready to help, and meanwhile I thought I might as well follow the Lapps' example and go for a mountain climb, to see how things looked and how the land lay further north.

So I started up, first over some bare rock, over a drift of snow, and then across some flat moor-like ground, grown with lichens and heather, and sprinkled with huge erratic boulders. I can still



KUTDLER ISLAND AND CAPE TORDENSKJOLD
(*By the Author*)

clearly and distinctly remember every stone and every stalk. How strange it was, too, to have a wider view again, to look out to sea and see the ice and water shining far below me, to see the rows of peaks round about me lying bathed in the hazy sunshine, and to see, too, the 'Inland ice' stretched out before me, and, I might say, almost beneath my feet.

To the south was the high rounded summit of

Kutdlek Island, and beyond it the fine outline of Cape Tordenskjold. I welcomed the latter as a fellow-countryman, as not only the name but the form recalled Norway. I sat down on a stone to take a sketch and bask in the sun. As I rested there, delighting in the view and the mere fact of existence, I heard something come singing through the air and stop in the neighbourhood of my hand. It was a good well-known old tune it sang, and I looked down at once. It was a gnat, a real gnat, and presently others joined it. I let them sit quietly biting, and took pleasure in their attack. They gave me, these dear creatures, sensible proof that I was on land, as they sat there and sucked themselves full and red. It was long, no doubt, since they last tasted human blood. But this was a pleasure of which, as shall soon be told, we had afterwards reason to grow more than tired.

I sat a while longer, and presently heard a familiar twitter. I looked up and saw a snow-bunting perched on a stone close by, and watching the stranger's movements with his head first on one side and then on the other. Then he chirped again, hopped on to the next stone, and, after continuing his inspection for a while, flew off. At such times and places life is always welcome, and not least so when it comes in the form of a twittering little bird,

and finds a response in the small bird element of one's own nature, especially if one has long been outside the regions of spring and summer. Even a spider which I came across among the lichens on a stone on my way up was enough to turn my thoughts to home and kindlier scenes.

OUR FIRST LANDING-PLACE
(*From a photograph*)

From my point of vantage I could see a good way to the north. It looked as if we were to have open ice for the first bit, but beyond Inugsuit the floes seemed to lie closer, and clearly promised to give us trouble. But it was now time for me to go down and join the others, as the chocolate must be nearly ready.

It was nothing like so, however, when I reached the shore. The water was not yet boiling, and it was plainly a case of unskilful cooks. But they had certainly not had much practice while we were drifting south, as, if I remember right, we had only cooked three times in twelve days. Meanwhile I spent the time in taking a photograph of the scene, —of a spot which takes a prominent place in the history of our expedition.

At last the long-expected chocolate was ready, and six patient throats could at last enjoy deep draughts of the glorious nectar. Besides fuller allowances of the ordinary fare, we were treated, in honour of the day, to adjuncts in the form of oatmeal-biscuits and Gruyère cheese, and our native delicacies 'mysost' and 'tyttebær'-jam. It was indeed a divine repast, surpassing anything we had had hitherto; we deserved it and equally well enjoyed it, and our spirits were at the height of animation.

Balto's account of our stay on this island sets forth that 'the spot was quite free of snow, grass-grown, and covered with heather and a few juniper-bushes. We had quite a little feast here, and were treated to all the best we had —cheese, biscuits, jam, and other small delicacies. The cooking-machine was put up on a rock; we made chocolate, and sat round the pot, drinking, with the sea lying at our

feet. Nansen took several pictures, and the place was named Gamél's Haven.'

We came to the conclusion that we might for this once take our time and enjoy life to the full, but that this must be the last of such indulgence. Henceforth our orders were to sleep as little as possible, to eat as little and as quickly as possible, and to get through as much work as possible. Our food was to consist in the main of biscuits, water, and dried meat. To cook anything or to get fresh meat there would be little or no time, though there was plenty of game. The best of the season was already passed, and little of the short Greenland summer remained. But still we had time to reach the west coast, if only we used that time well. It was a question of sticking to our work, and stick to it indeed we did.

Our grand dinner was at last finished, and about five o'clock in the afternoon we embarked again and started on our way north.

At first we pushed on quickly, as the water-way was good and clear, but as evening came on things changed for the worse. The ice packed closer, and often we had to break our way. From time to time, however, we came upon long leads of open water and made ground fast. The sun sank red behind the mountains, the night was still and woke all our longings, the day lay dreaming beyond the distant

peaks, but there was little time for us to indulge in sympathy with Nature's moods and phases. The whole night we worked northwards through the ice. At midnight it was hard to see, but with attention we could distinguish ice from open water by the reflection from the glowing evening sky.

I was the more anxious to push on, for it was not far to the ill-famed glacier of Puisortok, where Captain Holm on his voyage along the coast in 1884 was kept by the ice seventeen days. I imagined that the reason why this spot had so evil a reputation was because the current held the floes more closely packed here than elsewhere, and it seemed to me of vital importance that we should reach this point of difficulty as soon as possible, in order to take the first opportunity caused by the opening of the ice to push by.

In the course of the night we reached the headland of Kangek or Cape Rantzau, where the ice was packed so close that we could row no longer, but had to force our way. Before our axe, long boat-hooks, and crowbars all obstacles had, however, to recede, and we worked steadily on. But the new ice formed on the water between the floes added much to our labour, as towards morning it grew thicker and hindered the boats considerably, and it even remained unmelted till well into the day. Towards morning,

too, our strength began to give out; we had now worked long and were hungry, as we had eaten nothing since our great dinner of the day before. Some of us were so sleepy, too, that we could scarcely keep awake. In our zeal to push onwards, and our enjoyment of our new life, we had quite forgotten bodily needs, which now asserted themselves with greater insistence. So we landed on a floe to rest and refresh ourselves. Breakfast was a pure enjoyment, though we could scarcely allow that we had time to sit still to eat it. Then came the sun; his beams shot up through space, lighter and lighter grew the sky, the spot on the north-east horizon burned brighter and brighter, and then the globe of fire himself rose slowly above the plain of ice. We let mind and body bask in his rays; new life quickened in us, and weariness had in a moment fled away. Once more we set to work in the growing dawn.

But the ice was closer packed than ever, and inch by inch and foot by foot we had to break our way. Often things looked simply hopeless, but my indefatigable comrades lost not heart; we had to push through, and push through we did.

We passed Cape Rantzau, passed Karra akungnak, which is known from Holm and Garde's voyage in 1884, and reached Cape Adelaer, where things were bad, even to despair. The floes lay jammed together,

were huge and unwieldy, and refused to move. With our long boat-hooks we tried to part them, but in vain. All six as one man fell to, but they lay like rocks. Once more we put all our strength into our work, and now they gave. A gap of an inch inspirited us; we set to again, and they opened further. We now knew our strength, and perseverance was sure of its reward. Presently they had parted so far that we could take the boats through after hacking off the projecting points of ice. Thus we pass on to the next floe, where the same performance is repeated. By united exertion, pushed to its utmost limits, we force our way. It needs no little experience to take boats safely through ice like this. One must have an eye for the weak points of the floes, must know how to use to the best advantage the forces at one's disposal, must be quick to seize the opportunity and push the boats on just as the floes have parted, for they close again immediately, and if the boats are not through, and clear, they are at once unmercifully crushed. Several times, when we were not quite quick enough, Sverdrup's boat, which followed mine, was nipped between the floes till her sides writhed and bulged under the pressure: but her material was elastic, and she was finally always brought through without real mishap.

At last we passed Cape Adelaer, and worked along the shore, through ice that still lay closely packed, to the next promontory, which I have since named Cape Garde. We reached this cape about noon, and determined to land and get something to eat, and some sleep, both of which we sorely needed after more than twenty-four hours' hard and continuous work in the ice. We had just with great difficulty dragged our boats up the steep rocks, pitched our tent, and begun our preparations for dinner, when there occurred an event which was entirely unexpected, and to our minds indeed little short of miraculous.

My diary of the next day records the occurrence thus :—

'Yesterday, July 30, about noon, after an incredibly laborious struggle through the ice, we had at last put in by—let us for the moment call it Cape Garde—a promontory to the north of Karra akungnak to get some food and a few hours' sleep. The much-dreaded glacier, Puisortok, lay just in front of us, but we hoped to get by it without delay, though it had kept Hohn back for no less than seventeen days. While we were having some dinner, or, more accurately, were busy getting it ready, I heard amid the screams of the gulls a cry of a different kind, which was amazingly like a human voice. I drew the others' attention to

the fact, but there was so little probability of our finding human beings in these regions that for some time we were contented to attribute the noise to a "diver" (*Colymbus*) or some similar bird, which was perhaps as little likely to occur up here as a human being himself. However, we answered these cries once or twice, and they came gradually nearer. Just as we were finishing our meal there came a shout so distinct and so close to us that most of us sprang to our feet, and one vowed that that could be no "diver." And indeed I think that even the staunchest adherent of the sea-bird theory was constrained to waver. Nor was it long before Balto, who had jumped up on a rock with a telescope, shouted to us that he could see two men. I joined him at once, and soon had the glass upon two black objects moving among the floes, now close to one another, now apart. They seemed to be looking for a passage through, as they would advance a bit and then go back again. At last they come straight towards us, and I can see the paddles going like mill-sails—it is evidently two small men in "kayaks." They come nearer and nearer, and Balto begins to assume a half-astonished, half-uneasy look, saying that he is almost afraid of these strange beings. They now come on, one bending forwards in his canoe as if he were bowing to us, though this

was scarcely his meaning. With a single stroke they come alongside the rocks, crawl out of their "kayaks," one carrying his small craft ashore, the other leaving his in the water, and the two stand before us, the first representatives of these heathen Eskimo of the east coast, of whom we have heard so much. Our first impression of them was distinctly favourable. We saw two somewhat wild but friendly faces smiling at us. One of the men was dressed in a jacket, as well as breeches, of sealskin, the two garments leaving a broad space uncovered between them at the waist. He had on "kamiks," the peculiar Eskimo boots, and no covering for the head except a few strings of beads.'

Here my entry describing this strange meeting is broken off, though my recollection of the scene is still as vivid as if it had all happened yesterday, and it is an easy matter for me to supply all that is wanting. The other one had, to our surprise, some garments of European origin, as his upper parts were clad in an 'anorak,' a sort of jacket, of blue cotton stuff with white spots, while his legs and feet were cased in sealskin trousers and 'kamiks,' and his waist was also to a large extent quite bare of clothing. On his head he had a peculiar broad and flat-brimmed hat, formed of a wooden ring over which blue cotton stuff had been stretched. On the crown was

a large red cross covering its whole expanse. This pattern of head-dress, in various garish colours and generally with the cross upon it, is very common among the Eskimo of the east coast. They use them when in their 'kayaks,' partly for the shade they afford, and partly for the decorative effect. Later they showed us some of these hats with great pride. They were little fellows, these two, evidently quite young and of an attractive appearance, one of them, indeed—he with the beads in his hair—being actually handsome. He had a dark, almost chestnut-brown skin, long jet-black hair drawn back from the forehead by the band of beads and falling round his neck and shoulders, and a broad, round, attractive face with features almost regular. There was something soft, something almost effeminate, in his good looks, so much so indeed that we were long in doubt whether he was a man at all. Both these little fellows were of light and active build, and were graceful in all their movements.

As they approached us they began to smile, gesticulate, and talk as fast as their tongues would go, in a language of which, of course, we understood not a single word. They pointed south, they pointed north, out to the ice and in to the land, then at us, at our boats, and at themselves, and all the time chattering with voluble persistence. Their eloquence,

indeed, was quite remarkable, but little did it enable us to comprehend them. We smiled in our turn and stared at them in foolish helplessness, while the Lapps showed open indications of uneasiness. They were still a little afraid of these 'savages,' and held themselves somewhat in the background.

Then I produced some papers on which a friend had written in Eskimo a few questions the answers to which I was likely to find serviceable. These questions I now proceeded to apply in what was meant to pass for tolerable Eskimo, but now came the Greenlanders' turn to look foolish, and they stared at me and then at each other with an extremely puzzled air. I went through the performance again, but with exactly the same result, and not a word did they understand. Persevering, I tried once or twice more, the only effect of which was to make them gesticulate and chatter volubly together, leaving us as wise as we were before. In despair I threw the papers down, for this was a performance that could only lead to premature grey hair. I wanted to find out something about the ice further north, but the only semblance of success was that I thought I heard them mention Tingmiarmiut, at the same time pointing northwards, and once, too, Umanak—or, at least, I seemed to catch some sounds which these names might be supposed to represent—but even this left

us in exactly the same state of darkness. Then I had recourse to signs, and with better success, for I learned that there were more of them encamped or living to the north of Puisortok, and that it was necessary to keep close under the glacier to get by. Then they pointed to Puisortok, made a number of strange gesticulations, and assumed an inimitably grave and serious air, admonishing us the while, all of which apparently meant that this glacier was extremely dangerous, and that we must take the greatest care not to run into it, nor to look at it, nor to speak as we passed it, and so on. These East Greenlanders, it is said, have a number of superstitious notions about this particular glacier. Then we tried by means of signs to make them understand that we had not come along the land from the south, but from the open sea, which intelligence only produced a long-drawn sonorous murmur, deep as the bellow of a cow, and, as we supposed, meant to express the very extremity of astonishment. At the same time they looked at one another and at us with a very doubtful air. Either they did not believe a word we told them, or else, perhaps, they took us for supernatural beings. The latter was probably their real estimate of us.

Then they began to admire our equipment. The boats, above all, attracted their attention, and the iron

fittings especially excited the greatest astonishment and admiration.

We gave them each a bit of meat-biscuit, at which they simply beamed with pleasure. Each ate a little and carefully put away the rest, evidently to take home to the encampment. All this while, however, they were shivering and quaking with the cold, which was not to be wondered at, as they had very little in the way of clothing on, and, as I have said, were completely naked about the waist, while the weather was anything but warm. So, with some expressive gestures telling us that it was too cold to stand about there in the rocks, they prepared to go down to their canoes again. By signs they asked us whether we were coming northwards, and, as we answered affirmatively, they once more warned us against the perils of Puisortok, and went down to the water. Here they put their skin-capes on, got their 'kayaks' ready, and crept in with the lightness and agility of cats. Then with a few strokes they shot as swiftly and noiselessly as water-fowl over the smooth surface of the sea. Then they threw their harpoons or bird-spears, which flew swift as arrows and fell true upon the mark, to be caught up again at once by the 'kayaker' as he came rushing after. Now their paddles went like mill-sails as they darted among the floes, now they stopped to force their way

or push the ice aside, or to look for a better passage. Now, again, an arm was raised to throw the spear, was drawn back behind the head, held still a moment as the dart was poised, then shot out like a spring of steel as the missile flew from the throwing-stick. Meanwhile they drew further and further from us; soon they looked to us like mere black specks among the ice far away by the glacier; and in a moment more they had passed behind an iceberg and disappeared from our view. And we remained behind, reflecting on this our first meeting with the east coast Eskimo. We had never expected to fall in with people here, where, according to Holm and Garde's experience, the coast was uninhabited. These we thought must be some migrant body, and in this belief we retired to our tent, crept into our bags, and were soon fast asleep.

Balto's description of this meeting, though written a year after the occurrence, agrees so closely with the notes in my diary which were entered the day after it, but have never been accessible to him, that I think I ought to quote it in justice to his memory, if not for its own sake. 'While we were sitting and eating,' he writes, 'we heard a sound like a human voice, but we thought it was only a raven's cry. Presently we heard the same sound again, and now some of us thought it was a loon screaming.

Then I took the glasses and went up on to a point of rock, and, looking about, saw something black moving across an ice-floe. So I shouted: "I can see two men over there on the ice," and Nansen came running up at once and looked through the glass too. We now heard them singing their heathen psalms, and called to them. They heard us at once, and began to row towards us. It was not long before they reached us, and as they came closer one of them gave us a profound bow. Then they put in to shore, and, getting out, dragged their canoes up on to land. As they came near us they lowed like cows, which meant that they wondered what sort of folk we were. Then we tried to talk to them, but we could not understand a word of their language. So Nansen pulled out his conversation-book and tried to talk to them that way, but it was no use, because we could not make out how the letters were to be pronounced in their language. Then Nansen went down to the boats and fetched some biscuit, which he gave to them, and afterwards they rowed away again northwards.'

About six o'clock in the afternoon I woke and went out of the tent to see what the ice was doing. A fresh breeze was blowing off the land, and the floes had parted still more than before. There seemed to be a good water-way leading north, and I called my companions out.

We were soon afloat and steering northwards for the dreaded glacier, in the best water we had had as yet. I was in constant fear, however, that things would be worse further on, and lost no time. But things became no worse, and the ice up here consisted chiefly of larger and smaller glacier-floes, which are much better than sea-floes to have to deal with in wooden boats, which are not cut by their sharp edges as skin-boats are. What hindered us most was that the water between the floes was full of small brash of the broken glacier ice. We pushed through, however, and the water proved comparatively good the whole way. Without meeting serious obstacles we passed the glacier, sometimes rowing right under the perpendicular cliffs of ice, which showed all the changing hues of glacier-blue, from the deepest azure of the rifts and chasms to the pale milky-white of the plain ice-wall, and of the upper surface, on which the snow still lay here and there in patches.

It is difficult to see what it really is that has given this glacier its evil reputation. It has very little movement indeed, and therefore seldom calves, and when it does the pieces which come away must be relatively small, for there are no large icebergs to be seen in the sea near its edge. Nor is there depth enough of water to make such possible, and, further-

more, at several points the underlying rock is visible, so that the glacier does not even reach the water throughout its whole extent.

However, Graah and even earlier writers record the excessive dread which the Eskimo have for this dangerous glacier, which is always ready to fall upon and crush the passer-by, and far away from which out at sea huge masses of ice may suddenly dart up from the depths and annihilate both boat and crew. The name Puisortok also points in this direction, as it means 'the place where something shoots up.' It occurs at more than one point on the eastern coast in connection with glaciers, though its real force and intention is not easily explicable. That the Greenlander crews employed by Holm and Garde had the same superstitious dread of this same glacier is made very plain in their interesting narrative. Garde tells us that the idea prevalent among the natives of the southern part of the west coast is that 'when one passes Puisortok one has to row along under an overhanging wall of ice which may fall at any instant, and over masses of ice which lurk beneath the surface of the water and only await a favourable moment to shoot up and destroy the passing boats.'

The Eskimo of the south-west have no doubt got their superstitious notions from the wild natives of the east coast with whom they have come into

contact. The latter even have a number of rules of conduct which should govern the behaviour of the passer-by if he wish to escape alive. There must be no speaking, no laughing, no eating, no indulgence in tobacco, neither must one look at the glacier, nor mention the name Puisortok. If he do the latter, indeed, the glacier's resentment is such that certain destruction is the result.

In spite of all this one thing is certain, that Puisortok falls far short of its reputation. As I afterwards discovered, it is not even in connexion with the great sheet of the 'Inland ice.' It is a comparatively small local glacier lying upon a mountain ridge which is separated from the 'Inland ice' by a snow-covered valley on its inner side. This is, of course, the reason of its relatively slight movement, which according to Garde's measurements is not above two feet in the twenty-four hours. Its very form and inclination also point to the fact that it is only local.

The only remarkable thing about it is that it has so long a frontage to the sea. Garde estimates its breadth at about five miles, which is apparently correct. This fact, as Garde suggests, must plainly be the reason why the Eskimo are so afraid of it, for, as it comes right out into the sea, and has no protecting belt of islands and rocks, they are forced

to pass along its face in the course of their journeys up and down the coast. The Eskimo dread any passage of the kind, which is not unreasonable, as the glaciers are continually calving, or dropping masses of ice from their upper parts, and the danger to passing craft by no means imaginary. For if a boat happen to be off a glacier at the moment of its calving it will in most cases no doubt be lost beyond all hope of salvation. Even if the falling masses do not come into direct contact with it, the water is agitated to such a tremendous extent, and the floes and floating fragments of ice are thrown about so violently, that the chances of escape are very small.

All the great glaciers, however, lie far in the recesses of narrow fjords, which in the course of ages they have themselves cut out or deepened by their powerful onward movement. But it is seldom that the Eskimo find their way into these fjords, and it is not as a rule necessary for them to pass close under these huge cliffs of ice, whose dangerous caprices they nevertheless well know. It is therefore, after all, not so much a matter for wonder that they feel anxiety when they have to pass so long a stretch of glacier as Puisortok, notwithstanding its comparatively gentle ways.

Be this as it may, we passed the glacier without

mishap, and no superstitious terror prevented us from enjoying to the full the fantastic beauty of these mighty walls of ice.

The water was still comparatively favourable as we worked north, and we pushed on fast. Our courage rose and rose, and we grew more and more convinced that nothing would now hinder us from reaching our goal.

THE ESKIMO ENCAMPMENT AT CAPE BILLE
(By E. Nielsen, from a photograph)

CHAPTER XII

THE EAST COAST—AN ESKIMO ENCAMPMENT

As we drew near Cape Bille, the promontory which lies to the north of Puisortok, we heard strange sounds from shore—as it were, a mixture of human voices and the barking of dogs. As we gazed thither we now caught sight of some dark masses of moving objects, which, as we examined them more closely, we found to be groups of human beings. They were spread over the terrace of rock, were chattering in indistinguishable Babel, gesticulating, and pointing towards us as we worked our way quietly through the ice. They had evidently been watching us for some time. We now too discovered a number of skin-tents which were perched among

the rocks, and at the same time became aware of a noteworthy smell of train-oil or some similar substance, which followed the off-shore breeze. Though it was still early, and though the water in front of us seemed open for some distance, we could not resist the temptation of visiting these strange and unknown beings. At the moment we turned our boats towards shore the clamour increased tenfold. They shrieked and yelled, pointed, and rushed, some down to the shore, others up on to higher rocks in order to see us better. If we were stopped by ice and took out our long boat-hooks and bamboo poles to force the floes apart and make ourselves a channel the confusion on shore rose to an extraordinary pitch, the cries and laughter growing simply hysterical. As we got in towards land some men came darting out to us in their 'kayaks,' among them one of our acquaintances of the morning. Their faces one and all simply beamed with smiles, and in the most friendly way they swarmed round us in their active little craft, trying to point us out the way, which we could quite well find ourselves, and gazing in wonder

AN ESKIMO BOY FROM CAPE BILLE
(*From a photograph*)

at our strong boats as they glided on regardless of ice which would have cut their fragile boats of skin in pieces.

At last we passed the last floe and drew in to shore. It was now growing dusk, and the scene that met us was one of the most fantastic to which I have ever been witness. All about the ledges of rock stood long rows of strangely wild and shaggy-looking creatures—men, women, and children all in much the same scanty dress—staring and pointing at us, and uttering the same bovine sound which had so much struck us in the morning. Now it was just as if we had a whole herd of cows about us, lowing in chorus as the cowhouse door is opened in the morning to admit the expected fodder. Down by the water's edge were a number of men eagerly struggling and gesticulating to show us a good landing-place, which, together with other small services of the kind, is the acknowledged Eskimo welcome to strangers whom they are pleased to see. Up on the rocks were a number of yellowish-brown tents, and lower down canoes, skin-boats, and other implements, while more 'kayaks' swarmed round us in the water. Add to all this the neighbouring glacier, the drifting floes, and the glowing evening sky, and, lastly, our two boats and six unkempt-looking selves, and the whole formed a picture which we at least are not likely to

forget. The life and movement were a welcome contrast indeed to the desolation and silence which we had so long endured.

It was not long, of course, before our boats were safely moored and we standing on shore surrounded by crowds of natives who scanned us and our belongings with wondering eyes. Beaming smiles and kindliness met us on all sides. A smiling face is the Eskimo's greeting to the stranger, as his language has no formula of welcome.

Then we look round us for a bit. Here amid the ice and snow these people seemed to be comfortable enough, and we felt indeed that we would willingly prolong our stay among them. As we stopped in front of the largest tent, at the sight of the comfortable glow that shone out through its outer opening, we were at once invited in by signs. We accepted the invitation, and as soon as we had passed the outer doorway a curtain of thin membranous skin was pushed aside for us, and, bending our heads as we entered, we found ourselves in a cosy room.

The sight and smell which now met us were, to put it mildly, at least unusual. I had certainly been given to understand that the Eskimo of the east coast of Greenland were in the habit of reducing their indoor dress to the smallest possible dimensions, and that the atmosphere of their dwellings was the re-

verse of pleasant. But a sight so extraordinary, and a smell so remarkable, had never come within the grasp of my imagination. The smell, which was a peculiar blending of several characteristic ingredients, was quite enough to occupy one's attention at first entrance. The most prominent of the components was due to the numerous train-oil lamps which were burning, and this powerful odour was well tempered with human exhalations of every conceivable kind, as well as the pungent effluvia of a certain fetid liquid which was stored in vessels here and there about the room, and which, as I subsequently learned, is, from the various uses to which it is applied, one of the most important and valuable commodities of Eskimo domestic economy. Into further details I think it is scarcely advisable to go, and I must ask the reader to accept my assurance that the general effect was anything but attractive to the unaccustomed nose of the new-comer. However, familiarity soon has its wonted effect, and one's first abhorrence may even before long give way to a certain degree of pleasure. But it is not the same with everyone, and one or two of our party were even constrained to retire incontinently.

For my own part, I soon found myself sufficiently at ease to be able to use my eyes. My attention was first arrested by the number of naked forms which

thronged the tent in standing, sitting, and reclining positions. All the occupants were, in fact, attired in their so-called 'nâtit' or indoor dress, the dimensions of which are so extremely small as to make it practically invisible to the stranger's inexperienced eye. The dress consists in a narrow band about the loins, which in the case of the women is reduced to the smallest possible dimensions.

ESKIMO GARMENTS, ETC., FROM THE EAST COAST OF GREENLAND, IN THE ETHNOGRAPHICAL MUSEUM AT CHRISTIANIA

I. Woman's breeches; II. Man's indoor dress; III. Woman's indoor dress; IV. Amulet-strap worn by men; V. 'Kamik,' or Eskimo boot; VI. and VII. Knives.

Of false modesty, of course, there was no sign, but it is not to be wondered at that the unaffected ingenuousness with which all intercourse was carried on made a very strange impression upon us conventional Europeans in the first instance. Nor will the blushes which rose to the

AN ESKIMO 'AT HOME

(*By E. Nielsen, after a sketch by the Author*)

cheeks of some among us when we saw a party of young men and women who followed us into the tent at once proceed to attire themselves in their indoor dress, or, in other words, divest themselves of every particle of clothing which they wore, be laid to our discredit, when it is remembered that we had been accustomed to male society exclusively during our voyage and adventures among the ice. The Lapps especially were much embarrassed at the unwonted sight.

The natives now thronged in in numbers, and the tent was soon closely packed. We had been at once invited to sit down upon some chests which stood by the thin skin-curtain at the entrance. These are the seats which are always put at the disposal of visitors, while the occupants have their places upon the long bench or couch which fills the back part of the tent. This couch is made of planks, is deep enough to give room for a body reclining at full length, and is as broad as the whole width of the tent. It is covered with several layers of seal-skin, and upon it the occupants spend their whole indoor life, men and women alike, sitting often cross-legged as they work, and taking their meals and rest and sleep.

The tent itself is of a very peculiar construction. The framework consists of a sort of high trestle, upon which a number of poles are laid, forming a

semicircle below, and converging more or less to a point at the top. Over these poles a double layer of skin is stretched, the inner coat with the hair turned inwards, and the outer generally consisting of the old coverings of boats and 'kayaks.' The entrance is under the above-mentioned trestle, which is covered by the thin curtain of which I have already spoken.

This particular tent housed four or five different families. Each of them had its own partition marked off upon the common couch, and in each of the stalls so formed man, wife, and children would be closely packed, a four-foot space thus having sometimes to accommodate husband, two wives, and six or more children.

Before every family stall a train-oil lamp was burning with a broad flame. These lamps are flat, semicircular vessels of pot-stone, about a foot in length. The wick is made of dried moss, which is placed against one side of the lamp and continually fed with pieces of fresh blubber, which soon melts into oil. The lamps are in charge of the women, who have special sticks to manipulate the wicks with, to keep them both from smoking and from burning too low. Great pots of the same stone hang above, and in them the Eskimo cook all their food which they do not eat raw. Strange to say, they use neither peat nor wood for cooking purposes, though such

fuel is not difficult to procure. The lamps are kept burning night and day; they serve for both heating and lighting purposes, for the Eskimo does not sleep in the dark, like other people; and they also serve to maintain a permanent odour of train oil, which, as I have said, our European senses at first found not altogether attractive, but which they soon learned not only to tolerate, but to take pleasure in.

As we sat in a row on the chests, taking stock of our strange surroundings, our hosts began to try and entertain us. The use of every object we looked at was kindly explained to us, partly by means of words, of which we understood nothing, and partly by actions, which were somewhat more within reach of our comprehension. In this way we learned that certain wooden racks which hung from the roof were for drying clothes on, that the substance cooking in the pots was seal's-flesh, and so on. Then they showed us various things which they were evidently very proud of. Some old women opened a bag, for instance, and brought out a little bit of Dutch screw-tobacco, while a man displayed a knife with a long bone-handle. These two things were, no doubt, the most notable possessions in the tent, for they were regarded by all the company with especial veneration. Then they began to explain to us the mutual relations of the various occupants of the tent. A

man embraced a fat woman, and thereupon the pair with extreme complacency pointed to some younger individuals, the whole pantomime giving us to understand that the party together formed a family of husband, wife, and children. The man then proceeded to stroke his wife down the back and pinch her here and there to show us how charming and delightful she was, and how fond he was of her, the process giving her, at the same time, evident satisfaction.

Curiously enough, none of the men in this particular tent seemed to have more than one wife, though it is a common thing among the east coast Eskimo for a man to keep two if he can afford them, though never more than two. As a rule the men are good to their wives, and a couple may even be seen to kiss each other at times, though the process is not carried out on European lines, but by a mutual rubbing of noses. Domestic strife is, however, not unknown, and it sometimes leads to violent scenes, the end of which generally is that the woman receives either a vigorous castigation or the blade of a knife in her arm or leg, after which the relation between the two becomes as cordial as ever, especially if the woman have children.

In our tent the best of understandings seemed to prevail among the many occupants. Towards us

they were especially friendly, and talked incessantly, though it had long been quite clear to them that all their efforts in this direction were absolutely thrown away. One of the elders of the party, who was evidently a prominent personage among them, and probably an 'angekok' or magician, an old fellow with a wily, cunning expression, and a more dignified air than the rest, managed to explain to us with a great deal of trouble that some of them had come from the north and were going south, while others had come from the south and were bound north; that the two parties had met here by accident, that we had joined them, and that altogether they did not know when they had had such a good time before. Then he wanted to know where we had come from, but this was not so easily managed. We pointed out to sea, and as well as we could tried to make them understand that we had forced our way through the ice, had reached land further south, and then worked up northwards. This information made our audience look very doubtful indeed, and another chorus of lowing followed, the conclusion evidently being that there was something supernatural about us. In this way the conversation went on, and, all things considered, we were thoroughly well entertained, though to an outside observer our pantomimic efforts would, of course, have seemed extremely comical.

I will not be rash enough to assert that all the faces that surrounded us were indisputably clean. Most of them were, no doubt, naturally of a yellowish or brownish hue, but how much of the colour that we saw in these very swarthy countenances was really genuine we had no means of deciding. In some cases, and especially among the children, the dirt had accumulated to such an extent that it was already passing into the stage of a hard black crust, which here and there had begun to break away and to show the true skin beneath. Every face too, with few exceptions, simply glistened with blubber. Among the women, especially the younger section, who here as in some other parts of the world are incontinently vain, washing is said to be not uncommon, and Holm even accuses them of being very clean. But as to the exact nature of the process which leads to this result it will perhaps be better for me to say no more.

It might be supposed that the surroundings and habits of these people, to which I have already referred, together with many other practices, which I have thought it better not to specify, would have an extremely repellent effect upon the stranger. But this is by no means the case when one has once overcome the first shock which the eccentricity of their ways is sure to cause, when one has ceased to

notice such things as the irrepressible tendency of their hands to plunge into the jungle of their hair in hot pursuit, as their dirt-encrusted faces—a point on which, I may remark, we ourselves in our then con-

ESKIMO WOMAN FROM THE EAST COAST OF GREENLAND
(*From a photograph taken by the Danish 'Konebaad' expedition*)

dition had little right to speak—and as the strange atmosphere in which they live; and if one is careful at first not to look too closely into their methods of preparing food, the general impression received is

absolutely attractive. There is a frank and homely geniality in all their actions which is very winning, and can only make the stranger feel thoroughly comfortable in their society.

People's notions on the subject of good looks vary so much that it is difficult to come to a satisfactory determination with regard to these Eskimo. If we bind ourselves down to any established ideal of beauty, such as, for instance, the Venus of Milo, the question is soon settled. The east coast of Greenland, it must be confessed, is not rich in types of this kind. But if we can only make an effort and free our critical faculty from a standard which has been forced upon it by the influences of superstition and heredity, and can only agree to allow that the thing which attracts us, and on which we look with delight, for these very reasons possesses the quality of beauty, then the problem becomes very much more difficult of solution. I have no doubt that, were one to live with these people for a while and grow accustomed to them, one would soon find many a pretty face and many an attractive feature among them.

As it was, indeed, we saw more than one face which a European taste would allow to be pretty. There was one woman especially who reminded me vividly of an acknowledged beauty at home in

Norway, and not only I, but one of my companions who happened to know the prototype, was greatly struck by the likeness. The faces of these Eskimo are as a rule round, with broad, outstanding jaws,

ESKIMO BEAUTY, FROM THE EAST COAST, IN HER OLD AGE

(*By E. Nielsen, from a photograph taken by the Danish 'Konebaad' expedition*)

and are, in the case of the women especially, very fat, the cheeks being particularly exuberant. The eyes are dark and often set a little obliquely, while the nose is flat, narrow above and broad below. The whole face often looks as if it had been compressed

from the front and forced to make its growth from the sides. Among the women, and more especially the children, the face is so flat that one could almost lay a ruler across from cheek to cheek without touching the nose; indeed now and again one will see a child whose nose really forms a depression in the face rather than the reverse. It will be understood from this that many of these people show no signs of approaching the European standard of good looks, but it is not exactly in this direction that the Eskimo's attractions, generally speaking, really lie. At the same time there is something kindly, genial, and complacent in his stubby, dumpy, oily features which is quite irresistible.

Their hands and feet alike are unusually small and well-shaped. Their hair is absolutely black, and quite straight, resembling horse-hair. The men often tie it back from the forehead with a string of beads and leave it to fall down over the shoulders. Some who have no such band have it cut above the forehead or round the whole head with the jawbone of a shark, as their superstitions will not allow them on any account to let iron come into contact with it, even when the doubtful course of having it cut at all has been resolved upon. But, curiously enough, a man who has begun to cut his hair in his youth must necessarily continue the practice all his life. The

women gather their hair up from behind and tie it with a strip of seal-skin into a cone, which must stand as perpendicularly as possible. This convention is, of course, especially stringent in the case of the young unmarried women, who, to obtain the desired result, tie their hair back from the forehead and temples so tightly that by degrees it gradually gives way and they become bald at a very early age. A head which has felt the effects of this treatment is no attractive sight, but the victim in such cases has generally been a long time married and settled in life, and the disadvantage is therefore not so keenly felt.

After we had been sitting in the tent for a while one of the elders of the company, the old man with the unattractive expression, of whom I have already spoken, rose and went out. Presently he came in again with a long line of seal-skin, which, as he sat on the bench, he began to unroll. I regarded this performance with some wonder, as I could not imagine what was going to happen. Then he brought out a knife, cut off a long piece, and, rising, gave it to one of us. Then he cut off another piece of equal length and gave it to another, and the process was repeated till we all six were alike provided. When he had finished his distribution he smiled and beamed at us, in his abundant satisfaction with himself and the world at large. Then another

of them went out, came back with a similar line, and distributed it in like manner; whereupon a third followed his example, and so the game was kept going till we were each of us provided with four or five pieces of seal-skin line. Poor things! they gave us what they could, and what they thought would be useful to us. It was the kind of line they use, when seal-catching, to connect the point of the harpoon to the bladder which prevents the seal from escaping, and it is astonishingly strong.

After this exhibition of liberality we sat for a time looking at one another, and I expected that our hosts would show by signs their desire for something in return. After a while, too, the old man did get up and produce something which he evidently kept as a possession of great price and rarity. It was nothing else than a clumsy, rusty old rifle, with the strangest contrivance in the way of a hammer that it has ever been my good luck to see. It consisted of a huge, unwieldy piece of iron, in which there was a finger-hole to enable the user to cock it. As I afterwards found, this is the ordinary form of rifle on the west coast of Greenland, and it is specially constructed for use in the 'kayak.' After the old man had shown us this curiosity, and we had duly displayed our admiration, he made us understand by some very unmistakable gestures that he had nothing to put in it.

At first I pretended not to grasp his meaning, but, this insincerity being of no avail, I was obliged to make it plain to him that we had nothing to give him in the way of ammunition. This intimation he received with a very disappointed and dejected air, and he went at once and put his rifle away.

None of the others showed by the slightest token that they expected anything in return for their presents. They were all friendliness and hospitality, though no doubt there was a notion lurking somewhere in the background that their liberality would not prove unproductive, and, of course, we did not fail to fulfil our share of the transaction next day. The hospitality, indeed, of this desolate coast is quite unbounded. A man will receive his worst enemy, treat him well, and entertain him for months, if circumstances throw him in his way. The nature of their surroundings and the wandering life which they lead have forced them to offer and accept universal hospitality, and the habit has gradually become a law among them.

After we considered we had been long enough in the tent we went out into the fresh air again, and chose as our camping-ground for the night a flat ledge of rock close to the landing-place. We then began to bring our things ashore, but at once a crowd of natives rushed for our boats, and numbers

of hands were soon busy moving our boxes and bags up on to the rocks. Every object caused an admiring outburst, and our willing helpers laughed and shouted in their glee, and altogether enjoyed themselves amazingly. The delight and admiration that greeted the big tin boxes in which much of our provender was packed were especially unmanageable, and the tins were each passed round from hand to hand, and every edge and corner carefully and minutely examined.

As soon as the boats were empty we proposed to drag them up, but here again all insisted on giving their help. The painter was brought ashore, manned by a long line stretching far up the rocks, and the boats hauled up each by the united efforts of twenty or thirty men. This was splendid sport, and when one of us started the usual sailors' chorus to get them to work together, the enthusiasm reached its height.

They joined in, grown folk and children alike, and laughed till they could scarcely pull. They plainly thought us the most amusing lot of people they had ever seen. When the boats were safe ashore we proceeded to pitch our tent, an operation which engaged all their attention, for nothing can interest an Eskimo so much as any performance which belongs to his own mode of life, such as the management of tents and boats and such things.

Here their astonishment does not overcome them, for they can fully understand what is going on. In this case they could thus admire to the full the speedy way in which we managed to pitch our little tent, which was so much simpler a contrivance than their

ESKIMO, FROM THE CAMP AT CAPE BILLE

(*From a photograph*)

great complicated wigwams, though at the same time it was not so warm.

Our clothes too, and, above all, the Lapps' dress, came in for their share of admiration. The tall, square caps with their four horns, and the tunics with their long, wide skirts and edging of red and yellow, struck

them as most remarkable, but still more astonished were they, of course, in the evening, when the two Lapps made their appearance in their reindeer-skin pelisses. All must needs go and feel them and examine them, and stroke the hair of this wonderful skin, nothing like which they had ever seen before. It was not seal-skin, it was not bear-skin, nor was it fox-skin. 'Could it be dog-skin?' they asked, pointing to their canine companions. When we explained that it was nothing of that kind they could get no further, for their powers of imagination had reached their limit. Balto now began to gibber and make some very significant movements with his hands about his head, with the idea of representing reindeer horns, but this awoke no response. Evidently they had never seen reindeer, which do not occur on that part of the east coast which they frequent.

Then we distributed the evening rations, and ate our supper sitting at the tent-door, and surrounded by spectators. Men, women, and children stood there in a ring many ranks deep, closely watching the passage of every morsel of biscuit to our lips and its subsequent consumption. Though their mouths watered to overflowing at the sight of these luxuries, we were constrained to take no notice. We had no more in the way of bread than we actually needed, and, had we made a distribution throughout all this

hungry crowd, our store would have been much reduced. But to sit there and devour one's biscuits under the fire of all their eyes was not pleasant.

Our meal over, we went and had a look round the encampment. Down by the water were a number of 'kayaks' and a few specimens of the 'umiak' or large skin-boat, which especially interested me. One of the men was particularly anxious to show me everything. Whatever caught my eye, he at once proceeded to explain the use of by signs and gestures. Above all, he insisted on my examining his own 'kayak,' which was handsomely ornamented with bone, and all his weapons, which were in excellent condition and profusely decorated. His great pride was his harpoon, which, as he showed me triumphantly, had a long point of narwhal tusk. He explained to me, too, very clearly the use of the throwing-stick, and how much additional force could be given to the harpoon by its help. Every Eskimo is especially proud of his weapons and 'kayak,' and expends a large amount of work on their adornment.

By this time the sun had set and the night fallen, and consequently the elements of weirdness and unreality which had all the time pervaded this scene, with its surroundings of snow and ice and curious human adjuncts, were now still more predominant and striking. Dark forms flitted backwards and

forwards among the rocks, and the outlines of the women with their babies on their backs were especially picturesque. From every tent-door through the transparent curtain shone a red glow of light, which, with its suggestions of warmth and comfort, led the fancy to very different scenes. The resemblance to coloured lamps and Chinese lanterns brought to one's mind the illuminated gardens and summer festivities away at home, but behind these curtains here lived a happy and contented race, quite as happy, perhaps, as any to which our thoughts turned across the sea.

Then bed-time drew near, and the rest we sorely needed after the scanty sleep of the last few days. So we spread our sleeping-bags upon the tent-floor and began the usual preparations. But here again our movements aroused the keenest interest, and a deep ring of onlookers soon gathered round the door. The removal of our garments was watched with attention by men and women alike, and with no sign of embarrassment, except on our part. Our disappearance one by one into the bags caused the most amusement, and when at last the expedition had no more to show than six heads the door of the tent was drawn to and the final 'Good-night' said.

That night we could sleep free from care and without keeping watch, and it was a good night's

rest we had, in spite of barking dogs and other disturbances. It was late when we woke and heard the Eskimo moving busily about outside. Peeping through the chinks of the door, we could see them impatiently pacing up and down, and waiting for the tent to be thrown open again that they might once more feast their eyes on all the marvels hidden inside. We noticed to-day, and we supposed it was in our honour, that they were all arrayed in their best clothes. Their clean white frocks, made of the same thin membranous skin as the tent curtains, shone as brilliantly as clean linen in the distance, as their wearers walked up and down and admired their own magnificence. Down by our boats, too, we saw a whole congregation, some sitting inside and others standing round. Every implement and every fitting was handled and carefully scrutinised, but nothing disturbed or injured.

AN ESKIMO FROM CAPE BILLE
(*From an instantaneous photograph*)

Then came the opening of the door, and forth-

with a closely packed ring of spectators gathered round, head appearing above head, and row behind row, to see us lying in our bags, our exit thence, and gradual reinstatement in our clothes. Of all our apparel that which excited most wonder and asto-

ESKIMO FROM CAPE BILLE
(*From a photograph*)

nishment was a coloured belt of Kristiansen's, a belt resplendent with beads and huge brass buckle. This must needs be handled and examined by each and all in turn, and of course produced the usual concerted bellow. Then our breakfast of biscuits and water was consumed in the same silence and amid the same

breathless interest as our supper of the night before.

After breakfast we walked about the place, for we had determined to enjoy life for this one morning and see what we could of these people before we left them. I had tried, unnoticed, to take

ESKIMO FROM CAPE BILLE
(*From a photograph*)

a photograph of the ring which thronged our tent-door, but as I brought the camera to bear upon the crowd some of them saw my manœuvre, and a stampede began, as if they feared a discharge of missiles or other sorcery from the apparatus. I now tried to catch a group who were sitting on the rocks, but

again with the same result. So the only expedient was to turn my face away, and by pretending to be otherwise engaged to distract the attention of my victims and meanwhile secure some pictures.

Then I took a tour round the camping-ground with my camera. Outside one little tent, which stood

'OUTSIDE ONE LITTLE TENT I FOUND AN UNUSUALLY SOCIABLE WOMAN'
(*By E. Nielsen, from a photograph*)

somewhat isolated, I found an unusually sociable woman, apparently the mistress of the establishment. She was relatively young, of an attractive appearance altogether, with a smiling face and a pair of soft, obliquely set eyes, which she made use of in a particularly arch and engaging way. Her dress was certainly

not elegant, but this defect was, no doubt, due to her established position as a married woman, and must not be judged too harshly. In her 'amaut,' a garment which forms a kind of hood or bag behind, she had a swarthy baby, which she seemed very fond of, and which, like many of the mothers, she did her best to induce to open its black eyes and contemplate my insignificance. This was partly, no doubt, the flattery of the coquette; on the whole we got on very well together, and unperceived I secured several photographs. Then the master came out of the tent, and showed no sign of surprise at finding his wife in so close converse with a stranger. He had evidently been asleep, for he could hardly keep his eyes open in the light, and had to resort to a shade, or rather some big snow-spectacles of wood. He was a strongly-built man, with an honest, straightforward look, was very friendly, and showed me a number of his things. He was especially proud of his 'kayak'-hat, which he insisted on my

'THEN THE MASTER CAME OUT OF THE TENT'
(*From a photograph*)

putting on my head, while he meantime unceremoniously arrayed himself in my cap. This performance was little to my taste, as it was quite uncertain what would be the result of the exchange to me. Then he took me to see his big boat or 'umiak,' as well as other of his possessions, and we parted.

I went on, and looked into some other tents. In one of them I found two girls who had just taken a big gull out of a cooking-pot, and were beginning to devour it, each at work with her teeth on one end of the body, and both beaming with delight and self-satisfaction. The bird still had most of its feathers on, but that did not seem to trouble them much. Perhaps, after the manner of the owl, they subsequently ejected them.

Some of the women had noticed that the Lapps used the peculiar grass known as 'sennegræs,' of which I have already spoken, in their boots, and they now brought each of us a huge supply of the commodity, smiling most coquettishly as they made their offering. We expressed our thanks, of course, by an equally lavish display of smiles. Then they began to inquire, by means of signs, whether we had no needles to give them in return. I could have gratified them, certainly, since I had brought a number of these articles of barter, which are much prized on the east coast. But my real object was to keep them in

case we had to spend the winter in these parts, in which case they would have proved invaluable. So I told them that we could not let them have any needles in exchange for their grass, and gave them instead a tin which had had preserved meat in. This made them simply wild with delight, and with sparkling eyes they went off to show the others their new acquisition. The grass came in very handy for the two Lapps, whose store was running short, and without this grass in his shoes a Lapp is never thoroughly comfortable. They had a deal to say, too, about this Eskimo 'sennegræs.' The fact that these people had sense enough to use the grass impressed Ravna and Balto to a certain extent, but they declared it had been gathered at the wrong time of year, being winter grass taken with the frost on it, instead of being cut fresh and then dried, in accordance with the practice of rational beings. It was of little use to point out to them that it was not the habit of the Eskimo to lay up greater stores of

A BOY FROM CAPE BILLE
(*From a photograph*)

such things than he actually needed to keep him going.

But the time of our departure drew near, and we began by degrees to make our preparations. A man now came up to us and asked whether we were going northwards. At our answer in the affirmative his face brightened amazingly, and it proved that he was bound in the same direction with his party, to whom he went at once and announced the news. The camp was now a scene of lively confusion, and, while we and the Eskimo vied with one another in our haste to strike our tents, launch our boats, and stow our goods, the dogs, who well knew what was in progress, expended their energy in a howling competition.

As the tent we had spent the preceding evening in was going southwards, it was necessary that we should go and make some return for the presents we had received. So with a number of empty meat-tins I went in and found a party of half-naked men taking a meal. I gave them one each, which delighted them hugely, and some of them at once showed their intention of using them as drinking-vessels. Outside I found the possessor of the rifle, who again urged upon me the fact that he had no ammunition for it. But when I presented him with a large tin instead he expressed perfect contentment and gratification.

The great skin-tents were soon down and packed away in the boats. It was indeed quite astonishing to see the speed with which these Eskimo made ready for a journey with all their household goods and worldly possessions, though, of course, there were a great number of helping hands. We had almost finished our preparations too, when a salt-box was pleased to discharge its contents in the middle of one of the provision-bags. This had to be seen to at once, and the Eskimo consequently started before us. Two of the boats set off on their southward journey, and two more presently disappeared behind the first point of rock to the north. The company of 'kayakers,' however, were still left, as they stayed behind to bid each other a more tender farewell, before they parted, perhaps, for a separation of some years. This leave-taking gave rise to one of the most comical scenes I have ever witnessed. There were altogether a dozen or more of their little canoes, and they all now ranged up side by side, dressed as evenly as a squad of soldiers. This extraordinary manœuvre roused my attention, of course, and I could not imagine what it purported. I was not left long in ignorance, however, for the snuff-horns were presently produced, and the most extravagant excesses followed. The horns were opened and thrust up their noses again and again, till every

nostril must have been absolutely filled with snuff. Several horns were in circulation, and each came at least twice to every man, so that the quantity consumed may well be imagined. I wanted to photograph them, but lost time and could not bring my camera to bear upon them before the line was

'THE LINE WAS BROKEN, AND SOME OF THE CANOES ALREADY SPEEDING AWAY SOUTHWARDS AMONG THE FLOES'

(*From a photograph*)

broken, and some of the canoes already speeding away southwards among the floes.

This general treating with snuff is the mode in which the Eskimo take leave of one another, and is a very similar performance to the ceremonious dram-drinking among our peasants at home. In this par-

ticular case only those who had come from the south had anything to stand treat with. They were evidently fresh from the Danish colonies beyond Cape Farewell, as their abundant supply of snuff proved, while the others were probably bound south on a similar errand. These pilgrimages occur unfortunately too often, though their emporium lies at no trifling distance—a couple of years' journey, in fact, for those who live furthest up the coast.

One would almost expect that so long a journey would be followed by a long stay at the place of business. But this is not the case, and the Eskimo, in fact, spends little more time over his periodical shopping than a lady of the world over a similar, but daily, visit. In half an hour, or an hour perhaps, he has often finished, and then disappears again on his long journey home. A shopping expedition of this kind will therefore often take four years at least, and consequently a man's opportunities in this way in the course of a lifetime are very limited. These are quite enough, however, to produce a mischievous effect. One is apt to suppose that it is the want of certain useful things, otherwise unattainable, that urges them to these long journeys; but this is scarcely so, for the real incentive is without doubt a craving for tobacco. As a matter of fact they do buy some useful things, like iron, which they get

chiefly in the form of old hoops, but they really have a good supply of such things already, they do not use them much, and they are not absolutely necessary. Most of their purchases are things which are either altogether valueless or else actually injurious.

Among the latter must especially be reckoned tobacco, which is the commodity of all others most desired, and which they take in the form of snuff. Smoking and chewing are unknown on this coast, but their absence is made up for by all the greater excess in snuff-taking, the indulgence in which is quite phenomenal. They buy their tobacco in the form of twist, and prepare it themselves, by drying it well, breaking it up, and grinding it fine on stone. Powdered calcspar or quartz or other rock is often added to the snuff to make it go farther and to increase, it is said, the irritating effect upon the mucous membrane.

In addition to tobacco they buy other things which certainly have an injurious effect upon them, such as, for instance, tea. Coffee, curiously enough, these people have not learned to like, though this drink is bliss celestial to the west-coast Eskimo.

It is truly fortunate that they have no opportunity of getting spirits, as the sale is absolutely prohibited by the Danish Government. Of other European products, they buy biscuits, flour, peas,

which they are particularly fond of, and similar things. Articles of clothing, too, are in great demand, such as thick jerseys from the Faroe Islands, cotton stuffs for outer tunics, and material out of which they can make hats; old European clothes are highly valued, and they have an idea that when they can dress themselves out in these worn-out, rubbishy garments they cut a far finer figure than when they content themselves with their own warm and becoming dress of seal-skin.

In exchange for such things, which are of little value to us and of still less real worth to them, they give fine large bear-skins, fox-skins, and seal-skins, which they ought to keep for their own clothes and the other numerous purposes for which they can be used. It is, of course, unnecessary to remark how much better it would be if these poor Eskimo, instead of decking themselves out in European rags, would keep their skins for themselves, and confine themselves to those regions where they have their homes, instead of straying to the outskirts of European luxury and civilisation.

Many may think that this access to vegetable food is an advantage for the Eskimo, and possibly it would be if he had the chance of regularly supplying himself with flour and such things in small quantities. But, as the opportunity only occurs

perhaps a few times in the course of a man's life, the value of such a change of diet is, of course, very small. The effect, indeed, may very well be the opposite of beneficial, inasmuch as these Eskimo, when they do get European victuals into their possession, impose no restraint upon their appetites, but eat like wolves as long as the supply lasts, and an unwonted indulgence of this kind may easily produce serious internal disturbances.

There is a story current which well shows the beneficent effect of European fare upon the Eskimo stomach. A boat's crew of east-coast pilgrims had paid their visit to one of the trading places near Cape Farewell, and had, among other things, bought a quantity of peas. They were already on their homeward journey, and had put in to a little island for the purpose of cooking some of their peas and enjoying their first meal. They set their peas to boil, but, with the scantiness of experience only to be expected of them, they had no idea of the time necessary for the process, and set to work upon the peas while they were yet half-cooked. Now, the Eskimo are commonly reputed to eat at times even beyond the limits of ordinary repletion, and these poor folk no doubt continued the indulgence as long as their powers allowed them. But, as everyone knows, half-cooked peas have a most uncomfortable

tendency to swell as moisture gradually penetrates them. These peas proved too much for the Eskimo, and the consequence was that not long afterwards the whole company of victims to European food were found dead upon the island.

This story is declared to be a matter of common knowledge, but, whether it be a fact or not, there is nothing at all improbable about it, and it is a good illustration of the benefits likely to result from access to foreign articles of food. Though the consequences need not be at all so disastrous as on this occasion, still the real benefit can be but slight. When the Eskimo have at length consumed their purchases and must needs return to the old manner of life, the net result is that they have lost a number of useful possessions and have acquired a feeling of want and longing for a number of unnecessary things. This is, in fact, the usual way that the blessings of civilisation first make themselves felt upon the uncivilised.

CHAPTER XIII

THE EAST COAST—ANOTHER STAGE NORTHWARDS

When we were at last ready to start, all the 'kayakers' had disappeared except one, who, no doubt, wished to show us the civility of escorting us. Our surroundings were now just as empty and desolate as an hour ago they had been full of life and movement. Instead of on tents and dogs and human beings, the sun now shone down upon ice and snow and barren rocks.

We embarked and set off northwards along the coast. At first the water was open, and we worked hard at our oars, for the Eskimo boats had a substantial start, and as we hoped to profit largely by their knowledge of the water and ice, we were anxious to travel in their company. It was not long before we came up with them, and found them lying under shelter of a point of land, and apparently in difficulties. Some women stood up in one of the boats and waved to us. When we came nearer we were desired by the help of signs to go on in front and force a passage through the ice. This was certainly

in direct contradiction to our hopes and speculations, but of course we went to the front, and glided quietly by them in between two huge floes, which lay locked together and looked immovable. This was the obstacle which had brought the Eskimo to a standstill. But when we drove our first boat in between the two floes, and partly by using it as a wedge, partly by the help of our poles with all six men at work, really managed to force the two monsters apart, the admiration of our friends knew no limit, and was expressed in the usual extraordinary way. We now pushed on, breaking through the ice, which here caused no great difficulty. The two big boats followed, with four 'kayaks' in close attendance. Every movement on our part was accompanied by a sustained and vigorous bellow from behind, which was encouraging, though it was not the most melodious music we could have wished for.

We were much amused to see the 'kayakers' taking snuff. One of them especially was insatiable, and I believe he stopped every ten minutes to pull out his huge snuff-horn and fill both his nostrils. He sneezed, too, sometimes so violently that it was a mystery to me how he managed to keep his canoe on an even keel during his convulsions. When he looked at us again after one of these sneezes, with

his upper lip covered with snuff and the tears trickling from his eyes, his jovial face was so inestimably comical that every time we saluted him with shouts of laughter, in answer to which he nodded, smiled, and beamed with good humour. Then, too, they kept shouting from time to time the only word of their language which we managed to fix, and this, too, by the way, we fixed slightly wrong. It was 'pitsakase,' and meant, as we imagined, 'a splendid journey!' or something of the kind, as it was ejaculated on all occasions, as well when we forced our way through the ice as when we were rowing along in open water. But when we reached the west coast we learnt of the Eskimo there—whose language is much the same—that the word really means 'How clever you are!' or sometimes 'How good (or kind) you are!'

The larger boats used by the Eskimo, which have often been referred to already, and are called by them 'umiaks,' are, as I have said, only manned by women. Among Eskimo of pure blood it is considered beneath a man's dignity to row in one of these boats. But a man—in most cases the head of the household—must do the steering; and this duty is incumbent on him, much as he would prefer to be in his 'kayak.' These 'umiaks' are of considerable length, extending to thirty feet or even

more, though they are, as a rule, longer on the west coast of Greenland than on the east, where, owing to the prevalence of drifting ice, a short boat is, of course, not so difficult to manœuvre as a longer one, unhandy as these boats are in any case in such circumstances.

The women who manned the two boats which followed us rowed in a most extraordinary fashion, and not to any regular stroke. They began at a moderately fast rate, but the stroke was presently quickened, and then quickened again, growing shorter and shorter, of course, at each increase. As they pulled, too, they rose from their seats and stood upright in the boat in the middle of each stroke, and the whole performance was consequently of a very spasmodic and jumpy character. Then, suddenly, just as the bucketing had reached an 'allegro vivace' pitch, there was an 'easy all': the rowers rested to regain their wind, and then the same performance was gone through again. One of these buckets was, of course, only of very short duration, but there was a never-failing supply of them; and in this unorthodox way they really managed to get along pretty fast. In open water they quite kept pace with us, or often even passed us; which is not, however, to be wondered at, as we had only two men at the oars in each boat, while they had as

many as six or seven. Once something delayed us, and our companions went on ahead When we

'AND THE FLOES WERE FORCED TO GIVE WAY' (*By E. Nielsen, from a sketch by the Author*)

caught them up we found that they had again been stopped by the ice, and some of the women

were making signals to bring us to their help. We then came up with our long boat-hooks, as usual, and could scarcely help laughing when we found a single Eskimo standing and pushing valiantly at a huge ice-floe with a little stick. He looked so infinitely powerless and absurd as he stood there alone, and, of course, it had not struck the other men and women in the boats to come and help him. We now brought all hands to bear as usual, and the floes were forced to give way. We got through and pushed on, but the long boats were caught behind us, and only struggled through with some difficulty. This, indeed, happened again and again, that the longer boats were stuck in the channel which we, with our shorter boats, had just made for them. For this reason we might have pushed on a long way ahead, if we had not waited for the others. That such should be the case with these much and often praised Eskimo boats, without which Holm and Garde declare a voyage up the east coast out of the question, was a matter of no small surprise to me.

This has long been the view held by the Danes. They have had little or no actual experience in the navigation of such waters as these; and, taking it for granted that among the floes the Eskimo can have no equals, they have insisted that the peculiar Eskimo boats must be the best type for the purpose,

and at the same time that they must be manned by Eskimo crews. My experience leads me to the very opposite conclusion, and I am convinced that European boats, with good European crews who are accustomed to the sort of thing, are far to be preferred for this work. Nor is there any truth in the assertion which has been made that European boats cannot carry enough to serve the purpose.

It was now getting time for us to have a meal, and we accordingly had to distribute the rations. The Eskimo, who have a remarkable power of resisting hunger, meanwhile pushed on. Two of the 'kayakers,' however, stayed behind to watch us eating. We gave them some pieces of biscuit, which delighted them immensely. Then we started again and soon came within sight of the others. Two of the men we saw had climbed high up on the rocks on a point beyond Ruds Island and were looking out northwards over the sea and ice. This was a bad sign and meant, perhaps, that the ice was impassable. Meanwhile the others went on, and before we caught them up we had to pass the mouth of the fjord which lies between the island and the mainland. It now began to look like bad weather, the sky was darkening and rain beginning to fall. We put on our waterproofs and pushed hopefully on, but had not gone far before we saw the Eskimo boats coming

back to meet us. When they neared us all the women pointed to the sky with very grave faces, while the men explained that the ice was packed badly on ahead. They insisted that we must put back to the island and encamp there for the time being. I, however, made them understand that we wanted to go on, but they represented to me that this was impossible. I had my doubts about the impossibility, but thought it better not to proceed till I had been ashore and seen with my own eyes how things looked. So we all turned back to land, the Eskimo boats keeping inside the island, while we made for the nearest point. One of the 'kayakers' who saw our design followed us to apply all his powers of persuasion, as far as signs would allow. It was not to much purpose, however, for as soon as we reached the shore, I ran up on to a rock, and when, by the help of the glasses, I saw that the water looked fairly promising on ahead, we made up our minds then and there to push on at once. When our friend found that his eloquence was of no avail he went away with a very dejected air. However, we gave him a tin for a parting gift, and this seemed to alleviate his sorrow to no little extent. No doubt the rain was the real cause of the Eskimo's retreat. They did not seem to like the idea of getting wet, especially the women, several of whom had babies on

their backs. It is not to be wondered at that they tried to induce us to encamp with them, for we were of course beings of much too wonderful a nature for them to lose any opportunity of enjoying our entertaining society, and it was not at all impossible besides that a certain amount of profit of a more material kind would accrue to them from the association.

So we proceeded on our way, not a little proud, it must be confessed, of the fact that we were continuing our journey when the natives, who knew the water, had given up the attempt. For a long time, too, all went well and our confidence increased. But when we reached the middle of the fjord which we were now crossing we discovered that it was not all child's play. The ice was here packed rather close and a tearing current was playing with the great floes in a very unpleasant way. These monsters were now crashing one against the other, now floating apart again, and we had to be more than usually careful to keep our boats from getting crushed. The farther we got, too, the worse things looked. Once we were just between two long floes; they were driven violently together by the movements of their neighbours, and it was only by a very rapid retreat that we saved ourselves. Late in the evening, however, we reached the other side of the inlet in good

order, but here the shore was so steep that it was no easy matter to find a camping-place. But we presently came across a cleft in the rock, which gave us just enough room to haul up the boats by the help of the hoisting-tackle which we had with us. Higher up again in the cliff side was a ledge just big

THE VIEW TO THE SOUTH FROM 'THE EAGLE'S NEST'

(*From a photograph*)

enough to hold our tent. The whole position was eminently suggestive of an eyrie, and 'The Eagle's Nest' we consequently named it. The Eskimo name is Ingerkajarfik and the place lies in lat. 62° 10′ N. and long. 42° 12′ W.

The ledge which formed our camping-ground was

not the most convenient sleeping-place I have known. It sloped to such an extent that when we woke next morning, after an excellent night's rest nevertheless, we found ourselves all lying in a heap at one side of the tent.

Next day again we had glorious sunny weather. Just to the south of us a huge glacier stretched far out into the sea, and its blue masses, torn and rent by crevasses, played enchantingly in the sunlight. After a hearty breakfast we lowered our boats again and loaded them, and then, having taken a photograph of the view to the south, we started on our way through fairly open water. There were floes everywhere, but they did not lie close, and without any great difficulty we were able to wind in and out among them.

A little past noon we reached a small island off Mogens Heinesens Fjord, and put in to shore in an excellent harbour to have our dinner. This little island seemed to us the loveliest spot we had ever seen on the face of the earth. All was green here; there was grass, heather, sorrel, and numbers of bright flowers. Up at the top we found the ruins of two old Eskimo houses, and here the vegetation was most luxuriant. It was a simple paradise, and wonderfully delightful we found it to lie here stretched on the greensward in the full blaze of the sun and

roast ourselves to our heart's content, while we enjoyed the rare pleasure of a short rest. Then we gathered a few flowers in memory of this little Greenland idyll, and taking to the boats again resumed our northward journey.

The coast we had been passing along hitherto is not remarkable for any beauty of outline or mountain forms. It is low, monotonous, and chilling. As a rule the snow and ice of the glaciers come right down into the sea, and, as the map shows, there are comparatively few places where the low, grey rocks appear above the snow.

This afternoon, however, after we had passed the opening of Mogens Heinesens Fjord, which lies in a ring of fine, wild peaks, we came into a landscape of an entirely different character. Nowhere here did the snow-fields or glaciers stretch down to the sea; all along we found bare ground and rocks, the latter often rising out of the water to considerable heights; and inland, especially to the north, we had glorious mountain views of peak rising behind peak and range behind range; and such was the coast continuously to Igdloluarsuk, an unbroken, but ever-varying scene of wildness and beauty. Everything in this world is relative, and thus we seemed to ourselves to have now entered into a more fertile, more genial region. A warmer, kindlier sun even seemed to beam upon our

existence. Even in the midst of the ice-floes our minds were now open to thoughts of summer and summer moods, now that we had bare rock to look at instead of everlasting ice and snow. The change for us would scarcely have been much more complete if we had been suddenly transported to the most fruitful regions of the earth. Far to the north, too, we now saw the blue peaks of Tingmiarmiut beckoning and enticing us as it were to the land of promise.

As we advanced we met more and more huge icebergs, many of which lay stranded along the shore. Towards evening we saw by some small islands off Nagtoralik some most extraordinary white peaks, or rather spires, rising above the horizon. Their form was so singular that for a long time I could not imagine what they were, but I eventually discovered that they were the pinnacles of a colossal iceberg of the most fantastic appearance that I have ever seen. I took a distant photograph of it, but this gives absolutely no idea of its overwhelming magnitude and the impression it made upon us as we passed beneath it. From its top rose two points like slender church spires high into the air. Far up on its cliff-like side was a huge hole passing like a tunnel through the whole mass of ice; and down below, the sea had hollowed grottoes so large that a small ship could

readily have ridden within their shelter. In these cavities there were marvellous effects and tints of blue, ranging to the deepest ultramarine in their inmost recesses. The whole formed a floating fairy palace, built of sapphires, about the sides of which

A COLOSSAL ICEBERG OFF NAGTORALIK
(*From a photograph*)

brooks ran and cascades fell, while the sound of dripping water echoed unceasingly from the caverns at its base. When one comes across icebergs of this kind, which happens now and again, a wealth of beauty is found in fantastic forms and play of

colour which absorbs one's whole imagination and carries one back to the wonders and mysteries of the fairy-land of childhood.

It was now dark, and after having groped about for a while in search of a camping-place, we finally chose a little island which lies in lat. 62° 25′ N. and long. 42° 6′ W. As usual the boats were unloaded and hauled ashore. This was possibly the spot which is reputed by a tradition of the east coast to be the scene of a combat between a European and a Greenlander.

Next morning—we had now reached August 2—we set off again and purposed to cross the fjord which lay just to the north of us, passing on our way the island of Uvdlorsiutit. But we soon found ourselves among ice of the most impracticable kind, and were constrained to acknowledge the truth of the Eskimo dogma, the full force of which had indeed been made plain to us the day before, that, as a rule, the best water is to be found close under the shore. We had to turn back and try our luck nearer land and farther inside the fjord. As, however, the ice here also seemed closely packed and difficult, we were thinking of trying to pass the sound between the mainland and the island, when we caught sight of Eskimo tents on its southernmost point. We put in to make inquiries as to the water-way farther north, and

were not a little astonished to find ourselves received on the shore by a company of women and almost entirely naked children, in whom we recognised our friends of Cape Bille. They laughed at us heartily and gave us to understand that they had gone by us while we were asleep, probably on the morning before. They had pitched their tents here in a snug little spot amid grass and heather. Only one man was to be seen, and he was standing by one of the tents, busy mending his 'kayak,' which had probably been crushed in the ice by some mischance or other. All the other men and 'kayaks' were missing, and we supposed they must be out hunting in search of food.

We then asked about the water to the inside of the island, and we were told that no passage was possible that way, but that we must go outside. They even tried to make us believe that the channel was too narrow to allow of a passage, but this was not the fact, since Holm's expedition passed through several times. However, to make sure, we went outside the island, and got by without much difficulty. The ice certainly lay close at all the projecting points, but our united efforts forced a passage at these spots, and elsewhere we crept along under the shore.

Soon after noon we were at the northern end of

the island, where we came across a remarkable cave running far into the rocks. Hence we pushed on across the mouth of the fjord in fairly open water, and by the evening reached land at Tingmiarmiut, the Eldorado of the east coast, with its mountains, its stretches of green grass, and its scattered bushes of

THE NORTH SIDE OF THE FJORD AT TINGMIARMIUT
(*From a photograph*)

willow and juniper, the spot which was described to Captain Holm in such glowing colours by its quondam chief, Navfalik.

That evening, as we were passing the island of Ausivit some way out to sea, we heard from the land a distant sound of barking dogs, and inferred that there must be an Eskimo camp at hand. But we had

now really no time for visits and civilities, and passing unceremoniously on, we stopped for the night on an islet near Nunarsuak, in lat. 62° 43′ N. and long. 41° 49′ W.

On the morning of the next day, August 3, there was so much wind blowing off the land that we determined to try and sail, and hastily rigged our boats, one with the tent-floor and the other with two tarpaulins sewn together. At first we got on well and fast, and it was a real pleasure now and again to feel our boats heel over as the gusts caught them in the short stretches of open water, where we had, however, to keep our eyes about us to avoid collisions with the floes. We had not sailed far, though, before the pleasure became somewhat more doubtful, as the squalls grew more and more violent and the wind worked round to the north. It soon grew so strong that sailing became out of the question. Then after we had rowed a while, and were getting near the high, precipitous island of Umanarsuak, the wind came down from the cliffs with such force that it was all we could do to push on at all. Things now grew worse and worse; sometimes we had to tow the boats along the floes to make any headway, and once we were all but crushed by the violent movements of the ice. Hitherto we had kept fairly well together, but now our work was more serious, and each crew had

no eyes but for its own boat and its own course. At the very height of the storm one of my men, in his zeal, broke the blade of his oar off short. We had no whole oars in reserve on board, for they had all been broken in the ice, but there was no time to be lost, and one with half a blade had to be substituted. Sometimes the gusts of wind are so strong that in spite of all our efforts we are forced backwards. Now a thole-pin goes, which is a worse mishap than the last, for when a break like this occurs at a critical moment, and all the other thwarts are blocked, the consequences may be very awkward. However, we repaired the damage without delay, and were saved from drifting for this time. Thus slowly, but as surely as can be expected, we manage to crawl along towards shore by the exercise of all our powers. On our way we come alongside a floe, and, painter in hand, Dietrichson jumps out to tow us. In his zeal he fails to notice that he is jumping on to an overhanging edge of ice, which breaks with his weight, and lets him head first into the water. This was nothing unusual, indeed, but it could have happened at few more unfavourable moments than just now. With his usual activity and presence of mind, he is soon out again and once more at work with the tow-rope as if nothing had happened. The exertion, no doubt, kept him warm, or else a ducking while this

biting wind was blowing must have been peculiarly unpleasant. Such things as this, however, seemed never to trouble Dietrichson.

This floe we eventually passed, but the wind was still so strong that progress was scarcely possible. Very little more would have set us unmercifully drifting southwards. But my men plied their oar-stumps with surprising vigour, and we just held our own. Then, again, Dietrichson was just at work pushing us off another floe, when his boathook gave, and he was once more all but in the water. Misfortune pursued us that day with unusual pitilessness.

At last, however, we found calmer water under the cliffs, and soon reached land, Sverdrup's boat being a little in front of us. We now had our dinner, as well as a short period of rest, which we thoroughly deserved. Then we went on again, but the wind was scarcely less violent, and when we had passed into more open water beyond the southern point of Umanarsuak, we found a nasty choppy sea against us, running out of the fjord to the north. So, though it was still very early for us, we put in to shore as soon as we reached Umanak. This day, and it was the only time during this part of our journey, we were able to really choose a place for our tent, and, moreover, to feel for the first and last time the pleasure of lying on the grass, and having something

better than hard rock or ice to sleep upon. But we had really nothing to complain of on this score, for we always slept excellently, though we could well have wished for a little more in quantity. As soon as we were well ashore and settled, we determined to collect fuel, of which there was plenty in the form of juniper scrub, heather, and similar stuff, and then make some soup and a good hot meal. There were plenty of willing hands, the work was done with overflowing zeal, a big fire was soon blazing between some stones, and on them was cooking in a biscuit tin the most delicious soup and stew that mortals have ever seen. Our camping-place at Umanak, or Griffenfeldt's Island, will not soon be forgotten by the six who sat that evening round their fire and enjoyed at ease and at their leisure the only warm meal vouchsafed to them during the whole voyage up the coast. We were not the first to enjoy life in this spot, as we saw, among other things, by the ruins of some Eskimo huts which stood close at hand. That other events less agreeable than the mere enjoyment of life had taken place there was evident from the number of human bones that lay scattered about among the ruins, and one skull of an old Eskimo lay grinning at us in the daylight in a very uncomfortable and suggestive way. It seems not improbable that the inhabitants of this spot died of famine, that the

place was deserted, and the huts left to fall to pieces.

The next day, August 4, the wind had dropped to some extent and we could proceed. But the ice was often closely packed and we found it especially troublesome in the mouth of Sehested's Fjord. Here we had to push a long way in to find a passage, and it was only by the help of our axe and boathooks that we forced our way through at all. At nine o'clock in the evening we passed a delightful spot for an encampment, but as we thought it still too early to give over work for the day, we held on our way northwards. As a reward for our virtue, we had to push on till half-past one that night before we found a place where we could haul our boats ashore, on an islet off the island of Uvivak, in lat. 63° 3′ N. and long. 41° 18′ W. That day we had worked hard in the ice for seventeen hours with only half-an-hour's break for our midday meal.

On August 5, by the help of axe and boathook, we struggled on still farther through the packed ice which lay close along the shore the whole way northwards. A number of huge icebergs lined the coast, and in the middle of the afternoon, when we had passed the promontory of Kutsigsormiut, and had put in to a small island in order to get a sight of the water ahead and to lay our course, we saw at sixty

or seventy yards' distance a huge block of ice suddenly detach itself and fall from one of these monster icebergs, which, losing its balance thereby, at once swung round in the water with a deafening roar. The sea was set in violent agitation, the floes

WORK IN THE ICE ON THE WAY NORTHWARDS
(*By E. Nielsen, from a photograph*)

were thrown hither and thither and dashed together, and a small rock which rose out of the water in front of us was completely washed by the great waves. Had we gone on instead of stopping, as we had at one time contemplated, we should have had

little chance of escaping being dashed against the rocks of the shore.

After a very hard spell of work we reached, late in the evening, a small islet which lay full in the opening of Inugsuarmiutfjord. Here we had intended to stop for the day, worn and tired as we were, but to our astonishment we suddenly found ourselves passing out of the closely packed ice into an open stretch of water. The fjord lay bright and smooth before us right away to the island of Skjoldungen. We were tempted to make use of the opportunity, so after an extra ration of meat-chocolate we went on again and eventually found a good camping-place on an islet at the other side.

On the east coast of Greenland there is a considerable ebb and flow in the tide. As a rule at this time we were unfortunate enough to have low water in the evening just as we had to take our boats ashore, and we were obliged in consequence to haul them a long way up to get them out of reach of the rising tide. This particular night, too, we had, as usual, moved the boats and baggage well up, and in the morning were not a little surprised to find that our beer-keg and a piece of board which we had used to prop the boats with were gone. The sea had even washed over some of our provision tins, but as these were water-tight no damage was done. But we had good

reason to be thankful for having bought our experience so cheaply. For the rest of the way we were very careful about the boats. The loss of the keg, which was the one we had carried off from the 'Jason,' depressed us all considerably. This was not because it had any beer in it, for that we had consumed long ago. We had taken to using it as a water-vessel. The water we would drink from the bung-hole, and as we then smelt the fragrant emanations which still came from the interior, we could easily and to our great comfort persuade ourselves that we were actually imbibing some feeble and shadowy form of the invigorating drink we so much missed.

This morning, too, we were visited by a still less welcome guest. I woke to find myself scratching my face vigorously and to see the whole tent full of mosquitoes. We had begun by taking great pleasure in the company of these creatures on the occasion of our first landing on the Greenland coast, but this day cured us completely of any predilections in that way, and if there is a morning of my life on which I look back with unmitigated horror, it is the morning which I now record. I have not ceased to wonder indeed that we retained our reason. As soon as I woke I put on my clothes with all speed and rushed out into the open air to escape my tormentors. But

this was but transferring myself from the frying-pan to the fire. Whole clouds of these bloodthirsty demons swooped upon my face and hands, the latter being at once covered with what might well have passed for rough woollen gloves.

But breakfast was our greatest trial, for when one cannot get a scrap of food into one's mouth except it be wrapped in a mantle of mosquitoes, things are come to a pretty pass indeed. We fled to the highest point of rock which was at hand, where a bitter wind was blowing and where we hoped to be allowed to eat our breakfast in peace, and enjoy the only pleasure of the life we led. We ran from one rock to another, hung our handkerchiefs before our faces, pulled down our caps over our necks and ears, struck out and beat the air like lunatics, and in short fought a most desperate encounter against these overwhelming odds, but all in vain. Wherever we stood, wherever we walked or ran, we carried with us, as the sun his planets, each our own little world of satellites, until at last in our despair we gave ourselves over to the tormentors, and falling prostrate where we stood suffered our martyrdom unresistingly while we devoured food and mosquitoes with all possible despatch. Then we launched our boats and fled out to sea. Even here our pursuers followed us, but by whirling round us in mad frenzy tarpaulins

and coats and all that came to hand, and eventually by getting the wind in our favour, we at last succeeded in beating off, or at least escaping from, our enemy. But the loss of blood on our side was nevertheless very considerable. Never have I in my life fallen among such hungry mosquitoes. But, I may add, Greenland is one of the countries of the world which is most visited by this plague.

CHAPTER XIV

THE EAST COAST—FURTHER DEALINGS WITH THE ESKIMO

This day, August 6, we passed on the outside of Skjoldungen through closely packed ice. North of the island we were obliged to push a good way into the fjord, and here passed along a coast equalling in beauty anything which we had yet seen. On all sides the glaciers thrust into the sea their precipitous walls of ice, the faces of which were here and there hollowed into deep dark blue caves. A passage along such cliffs of ice is not quite free from danger. Several times that day as well as on others it happened that huge blocks from glaciers and icebergs, too, fell into the water not far from us, under any of which a boat would have been crushed to fragments.

When we had crossed the fjord, which is known as Akorninap-kangerdlua, the ice still being tight and obstructive, and were off a little island by Singiartuarfik, we suddenly heard the sound of human voices and at the same time became aware of a smell of train-oil. Looking towards land we saw a tent and a

party of natives, the latter in an unusual state of commotion. As the spot lay almost in our course, we steered thither, but the shrieking and general agitation now gave way to a headlong stampede. With all their possessions of value, skins, clothes, and what not, one figure after the other disappeared up the mountain-side. We could see them running as fast as their best legs would take them, and winding in and out in a long line among the ledges and projecting rocks. The party seemed to be almost exclusively women and children. The last we saw was a woman who dived into the only visible tent, but soon reappeared with an armful of skins and then fled like a rabbit after the rest up the slope. Their figures grew smaller and smaller as they increased the distance between themselves and us, though a few women stopped in their curiosity a long way up and observed our proceedings from a projecting ledge. Meanwhile we moved on towards the tent, but no living creature was to be seen save a dog, which, curiously enough, lay quietly before the door. Though we had no business to transact with these people and had no time to stop, we did not like to leave them without assuring them of our harmlessness. We made signs to them, we shouted to them the best Eskimo we could, but all to no purpose, as they simply stood and stared at us. But at last one

woman seemed unable to withstand the attractions of our demonstration, and quietly and hesitatingly she came nearer and nearer, with another following a little way behind. By degrees they came within hearing, though this did not make things much better, since we had nothing to say to them. But at least they now had the chance of distinctly seeing our friendly faces and reassuring looks and gestures, as well as the empty tins we displayed as prospective presents. The tins proved irresistible. The women assumed looks of extreme embarrassment and hesitation, though their appearance scarcely justified any apprehension that their beauty could lead them into trouble. But at this moment a man appeared suddenly upon the scene, and inspired them with so much courage that they came almost to the water's edge and stood there as we sat a little way out in our boats. We now looked one at the other, while the Eskimo, the man acting as precentor, intoned the usual chorus of wonder and admiration. He indeed looked, as he stood there, for all the world like a mad bull, though no doubt there could have been nothing milder or more peaceable than the train of his thought at the moment. On his back he had a jacket of some cotton stuff, and on his head a 'kayak' hat of the usual broad, flat form worn on the east coast of Greenland, made of a wooden hoop

covered with calico and marked with a cross in red and white, his whole get-up showing unmistakable signs of a connexion with the trading stations of the west coast. We now pulled farther in, and one of us jumped ashore with the painter. At this manœuvre the natives at first fled incontinently, but then returning to within a few paces and seeing we made no further sign of hostility, they became reassured once more and again came nearer. We now magnificently presented them with an empty tin, friendship was at once established, and their faces beamed with joy and with their admiration for the generous strangers. By this time more of them had gathered round, and it seemed that the men had been out in their canoes, but had been called back by the women's screams.

The new comers were all shown the precious gift and were given to understand that our intentions were not hostile. The most noteworthy among them was a little hunchbacked fellow, with a pleasant oldish face and particularly smart attire. We now made our boats fast and walked up the slope, finding, to our surprise, a whole encampment of tents which lay behind a low ridge and had not been visible before. More astonished still were we to see a 'Danebrog' flag waving on a little staff beside one of the tents. This, we supposed, must have been

obtained from Captain Holm some years ago, as he describes having distributed Danish flags here and there among the Eskimo. It was very strange that they should have been so afraid of us, since, if this were the case, they must have come into contact with Europeans before. But there must have been something uncanny about us, as we came in our own boats and our own company, while Holm had boats like those they used, and was rowed and steered by their own countrymen. Nor is it unlikely that the traditions which they have received from the west Greenlanders of the destruction of the 'Kavdlunak,' or Europeans, at the hands of their forefathers, and the dread that the latter will come one day out of the sea in ships and avenge the deed, are still predominant in their minds. In a little bay below the encampment was a big family boat, which had evidently been just launched in readiness for flight.

As I wanted to taste dried seal's flesh and thought besides that it would be a wise measure to cache some, if we could get it, with the boats, I proceeded to ask for some by the help of the appropriate word from my vocabulary, but with the usual unproductive result. But when I went and took hold of a piece of meat which was hanging up to dry in front of one of the tents, they understood me at once and brought out several joints. In return for this I gave them a

large darning needle, which magnificent scale of payment produced a lively exchange, and our friends came out with one huge piece of seal's flesh after the other, for which they received more needles Each of us, too, was presented with a piece, so in addition to the needles we gave them some more tins. Ravna, however, absolutely refused to take any present, and in spite of pressure persisted in his determination. I afterwards heard that this was because he thought these poor people would have need of their meat themselves, and besides he considered a needle altogether insufficient payment, and would be no party to such nefarious dealings.

Balto in his account of this meeting says: 'When we had rowed across the mouth of a fjord, we again smelt a smell of rank seal-blubber, but the heathens had taken to flight with their women and children, and were up on the rocks far above the tents. When we had come into the bay where the tents stood, we lay there looking at these poor creatures who had run away. Then Nansen shouted to them, "Nogut piteagag!" which should mean "we are friends," but is shocking bad Eskimo. But they took no notice of this, and stood waving their hands to us as if to say, "Go away! go away!" Then two men came out from behind a knoll. They came down to the water, and when they got close to us,

they bellowed like other heathens. One man did not seem to be more than three feet high. Then we went ashore, and asked them to let us have some dried seal's flesh, for we saw some hanging up round about, and we had read in Captain Holm's book that dried seal's flesh is very good to eat. We gave them some needles for the meat, and then went on.'

As Balto says, we soon embarked again, and we had not got far before we saw some of the men come paddling after us and towing enormous pieces of seal-meat which they wished to exchange for more needles. Just as we were getting into our boats, too, we had seen the little dwarf in the distance, coming along dragging a great piece with him, as he wanted to have his share too in the general exchange. He did not reach us in time, and we were now surprised to see a little fellow paddling along far away in our wake, and to recognise in him the same little hunchback. He certainly made a most comical figure, as he sat in his 'kayak,' with his little bent back scarcely showing above the gunwale. He was evidently exerting himself prodigiously to overtake us and effect a deal with his piece of meat; but in spite of all his efforts, the poor little fellow never reached us, and had to turn back disappointed.

As we advanced we met one 'kayak' after the other, the occupants of which all followed us, and

were particularly friendly and communicative. At last we had an escort of no less than seven of them, who, paddling round and round the boats, expressed the most unqualified admiration for us and our belongings.

When they had escorted us a long way and darkness was just coming on, they fell off little by little, and then lay still on the water for a while to watch us before they turned homewards. Just as the four last of them had dropped behind and were having their last look, I caught sight of a seal on a floe in front of us. Though this might have provided us with some very welcome fresh meat, I could not resist signalling to the four 'kayaks,' for we all wanted to see an Eskimo catch his seal. They came to us at once, but could not understand what we wanted, as from their low canoes they could not see the seal over the edge of the ice. I pointed, they looked and looked again, and then suddenly caught sight of him. It was a treat to see the 'kayaks' get under way and the paddles fly round, as the four started in pursuit, crouching as they went, in order to get near under cover of the ice. Two of the men outstripped the others and were fast drawing within distance. The seal now seemed a bit uneasy, but every time he lifted his head and looked towards them, the 'kayakers' stopped dead, and did not stir

till he turned away again. Then came a few more powerful strokes and another halt, and by this means they had got so near that we were expecting to see them every moment throw their harpoons, when suddenly the seal plunged into the water. They waited a while longer with their harpoons raised, ready to throw in case their prey showed himself again, but no seal appeared, so they turned homewards empty-handed.

We, too, a little disappointed, went on our way northwards, and finding the water open reached the island on which Savsivik lies, and encamped for the night on an islet off its east side in lat. 63° 20′ N., long. 41° W. This island is known from the fact that Graah passed the winter of 1829 30 on its inner side at Imarsivik.

Next day, August 7, we again found the ice awkward and difficult, but by dint of energy and perseverance we pushed through, and were rewarded again by finding more open water farther north. This day, too, we fell in with difficulties of another kind. Hitherto we had got on excellently with Holm and Garde's map of the coast, but here there was something altogether wrong. There seemed to be a number of islets, islands, and fjords which were not marked upon the map at all, or if so, then wrongly, and things came to such a pass at last that

I determined to navigate after my own head and trust to luck. What was the matter with this part of the map was a mystery to me, till I got home again and found that Holm had not been able to survey this section of the coast in the short time at his disposal, and had consequently been obliged to work from Graah's map instead. Nevertheless one would have supposed that Graah knew this particular neighbourhood well, seeing that he spent one winter there.

The coast to the north of this was prolific in sea-fowl, and there were several bird-rocks. Of gulls and guillemots we shot all that came in our way, but we had no time to stop for the purpose. On one rock, where numbers of guillemots nested, we climbed up to get some of the young ones, but our spoil consisted of only two. These birds, as a rule, manage to lay their eggs in such inaccessible places that fellow-creatures who have no wings cannot often reach them, except at the risk of breaking their necks. But the young guillemots are at the same time fat and rich, and are a real delicacy.

As we were shooting gulls and guillemots off a rock beyond Cape Moltke, we suddenly heard the whirr of wings and saw a flock of eider-duck rushing by us. There was just time to bring the gun round and have a shot at them, and two birds fell. These

were the first eider-duck we met with on the coast. The same day, later in the evening, another big flock came flying north. I heard Sverdrup from the other boat tell me to look out, and I also heard the whirr of their wings, but there was not light enough for a shot, as I could only get a glimpse of them against the dark background of the shore.

Meanwhile, we pushed on steadily northwards, and the misgivings of the Lapps became more visible every day, and were more openly expressed. Balto, the spokesman, had several times confided to me that they had felt more comfortable since they came across the Eskimo and had seen that they were decent folk and not cannibals, as he had been told at home in Finmarken, and that it would be possible to pass a winter with them in case of need. But now that we had seen the last of the natives, as they supposed, and were still going northwards, the two had begun to get very uneasy, and to complain of the hard work and short commons, and because we had had to come so far north, and yet had found no place from which to get up on to the ice, for there could be no question of such a thing on a coast like this, and they were sure it could never be any better. I always consoled Balto by telling him that farther on by Umivik, or a little way beyond that, the coast was much better, as indeed he must have seen himself as we drifted by in

the ice on our way south. But he always declared that he had seen nothing of the kind, and this particular day his complaints were so vociferous and high-pitched that I grew quite tired of them, and gave him a good sound lecture on his miserable cowardice, enforced by the strongest language at my command. This brought matters to a head, and Balto now resolved to speak his mind, and tell me all that he had been nursing up for the last few days. I had told them in Christiania, he declared, that they should have their coffee every day, and just as much food as they liked. But they had only had coffee once in three weeks, and as for the food, why, they had miserable rations served out to them. There was one thing he would tell me, that not a single one of them had eaten his fill since they reached the coast. They were starved, and besides were treated like dogs, were ordered about, and had to work from early morning till late at night, and harder than beasts. This was too much; for his part he would gladly give hundreds of pounds to be safe back at home again.

I now explained to him that they had had no coffee, first, because no promise had been made to them on this point or any other; secondly, because there had been no time to make coffee; and thirdly, because it was not good for them. Then I represented to him what the consequences would be

if we were all allowed to eat as much as we liked. The provisions might perhaps last us to the middle of Greenland, when it would be rather too late to repent. We must all share and share alike with the food, and as for the ordering about, he must understand that on such an expedition there must be one will and only one. But no, he refused to understand anything of the kind, refused to be comforted, and never ceased to deplore that he had fallen among people 'who had such strange ways,' as he expressed it. It was the Lappish nomadic tendency and the want of a spirit of submission which came out on these occasions, and it continued to do so in spite of Balto's good-nature and amiability. It was scarcely to be wondered at, indeed, and, as a matter of fact, I saw less and less of it as time went on.

There is no denying that it was hard upon us to go through the heavy work we did along the coast, and that upon a limited ration of dried food. We had been accustomed to eat our fill more or less, and our stomachs found it difficult to reconcile themselves to this strong but concentrated and compact form of food. By degrees we got used to it, and then things went better. It was, as Kristiansen said, the consciousness that what we got was enough for us which kept us going. When he got home he was asked whether he had had a good meal all the time.

'No,' he said, 'he had never eaten as much as he was good for.' 'Well,' was the answer, 'you did not like that, did you?' 'No, not at first,' said he, 'when we were not used to it; but then Nansen told us that what he gave us was enough, and that did the trick. And so it was enough, you see.'

The coast now began to get less abrupt, and the mountains lower and more rounded in form. We had in fact reached a section of the coast at which we could begin to contemplate our ascent, and to which I had long been anxious to attain, since if any mishap were to befall us and make our farther advance by boat impossible, we could nevertheless take to the 'Inland ice.' Our confidence now almost reached the limits of presumption, and our hearts grew very light. To this contributed not a little the fact that we had this evening an excellent water-way and brilliant weather, and made rapid progress.

As on the previous night, too, there was a glorious show of northern lights in the southern sky. The great billows of light rolled backwards and forwards in long, undulating streams. The flickering of the rays and their restless chase to and fro suggested crowds of combatants, armed with flaming spears, now retiring and now rushing to the onset, while suddenly as if at given signals huge volleys of missiles were discharged. These flew like a shower of fiery

darts, and all were directed at the same point, the centre of the system, which lay near the zenith. The whole display would then be extinguished, though only to begin and follow the same fantastic course again. The Eskimo have a pretty legend of the northern lights, and believe them to be the souls of dead children playing at ball in heaven.

We encamped for the night on the inner side of the island of Kekertarsuak. We had no sooner pitched our tent than we were startled by a thundering report from the south, from the direction of Cape Moltke. We seemed to feel the air itself vibrate and the very earth tremble. We rushed up to the nearest crag and looked southwards, but it was all too far off, and we could see nothing. The noise lasted some ten minutes, and the sound was as if a whole mountain side had fallen into the sea, and set the water in violent agitation, so that the waves reached almost to where we stood, and broke against the shore and rocks. Probably it was some enormous iceberg which had dissolved into fragments or changed its position in the water, though it is not at all impossible that it was an avalanche of rocks. At several places along the coast we had seen traces of such.

The next day, August 8, we proceeded in open water and splendid weather, and made an attempt to pass inside the islands at Igdloluarsuk and across

Kangerdlugsuak or Bernstorffsfjord, but were much surprised to find the fjord simply full of glacier and other ice which lay close in shore and barred all progress. So after I had been up on the innermost point of the island of Sagiarusek, and convinced myself of the impossibility of this route, we turned back to go outside the island. On the top of this point I found what I at first took to be a fallen cairn, the stones being laid some across others, and forming a kind of oblong chamber. Though the Eskimo fox-traps are not generally built exactly in this way, I nevertheless think that it must have been an old arrangement of the kind. Again, on the south side of the island, we noticed at the end of a small inlet some tall stones standing upright. We rowed in to see what they were, and came upon the most charming spot we had yet seen in Greenland, a little flat green meadow, and in front of it a big tarn of fresh water, with small fish swimming in it of a species which I could not determine. On one side of the meadow were ruins of Eskimo houses, one of them very large, and the rest smaller. There were many skeletons in and outside the large house, including a particularly well-preserved Eskimo skull, which we carried off. These bones pointed to the conclusion that this settlement, too, had been depopulated by famine.

Here we resolved upon a little self-indulgence and

enjoyment of life and, though it was not yet dinner-time, to lie in the long grass and rest and bask in the sunshine, while we ate the sorrel which, with other plants, grew here in luxuriance.

The Eskimo certainly knew what they were about when they settled in this spot, for there was

'THE MOST CHARMING SPOT WE HAD YET SEEN IN GREENLAND'
(From a photograph)

an excellent and well-protected harbour with a good piece of beach for their skin-boats, and, as I have said, the situation was charming. The five flat stones which were standing upright and first drew our attention to the place were long a riddle to me, but after I had had some conversation with Captain

Holm on the subject, I was inclined to the view that they were stocks for the 'umiaks,' or large skin-boats, that is to say, supports on which the boats are raised to be dried, and to which they are fastened when laid up for the winter.

There are besides many other traces of human occupation on these islands, which are, as a matter of fact, not one island, as they are given on Holm's map, but two, divided by a narrow sound, and the outer being the smaller. On several of the points also I found similar cairns of stones, or, as I suppose, remains of old fox-traps.

By the outermost islet off Igdloluarsuk we found the mouth of the fjord so full of huge icebergs that we had to go seawards to find a practicable passage. On our way we tried to push between the icebergs, but were soon stopped. The floes get jammed so fast in between these monsters by the furious current that there is no possibility of moving them. So we had to return once more and go further out to sea.

If in ordinary ice it is necessary to get a look ahead from some high-lying point, it is no less necessary to take the same measures among icebergs such as these. So whenever we came across one that was easily accessible we naturally mounted it at once. Imposing as these floating monsters look from below, when one rows beneath them, the effect,

as far as regards their magnitude, is nothing to that produced when one sees them from above. One we ascended at this particular moment was fairly flat and even on its upper surface, which in fact formed a plateau of considerable extent, an entry in Dietrichson's diary declaring that it was a quarter of an hour's walk across at its narrowest part. The surface was hard snow and there were slopes which would have suited us and our 'ski' to perfection. Its highest point was certainly more than two hundred feet above the water. If the reader will now bear in mind that the portion below the water is in all probability six or seven times as thick, he will be able to reckon a total of at least 1400 feet. And when he adds to this a breath of 1000 or 1300 yards, or even more, he will be able to realise sufficiently distinctly what the lumps of ice are actually like which float in these seas, and of which there are hundreds and thousands along this coast. Off this one fjord alone there were incalculable numbers of them. From that we were on there was a fine view, and the masses of icebergs looked like an alpine landscape of pure ice. Between them were chasms at the bottom of which one saw the sea. One of these lay at our feet and we could see a narrow strip of dark blue water winding in its channel between two precipitous walls of ice, each nearly two hundred feet in height.

The beauty of the whole landscape in this world of ice with its blue cliffs and strange outlines is very striking.

Icebergs are generally of two types, and nowhere could we have seen better how well these two types are distinguished than here where so many lay in view. One is at once inclined to think that they have had two quite different origins. Some of the icebergs have a very broken and riven surface, full of rents and irregularities. Such a surface is exactly that of a glacier which descends into the sea. These icebergs always have a very irregular outline, and by this and their blue tint one can tell them at great distances. Their origin is plain enough and they must be the product of sea-glaciers.

But there is also a much more prosaic type of iceberg, such as that on which we were now mounted. These have the form of an immense cube of ice with a comparatively smooth and polished upper surface, sharply-cut precipitous sides, and no blue crevasses. They are much whiter than the other kind and give an impression of far greater solidity. One can row beneath them with much more confidence, for they are not nearly so ready to drop fragments upon the head of the passer-by. Though owing to their smooth surface they are altogether unlike glacier-ice, they are without comparison the more numerous of

the two forms. There are certainly five times as many of these square icebergs as of the more irregular type.

Now whence do these other icebergs come, and how are they formed? This is a question over which I have long puzzled without arriving at any certain conclusion. It is a simple impossibility that there should be glaciers anywhere in these regions which flow so quietly into the sea that their surface is smooth and quite devoid of crevasses. Besides these very icebergs may be seen floating in the fjords just off glaciers of the ordinary torn and ragged form. They must consequently have their origin in these glaciers, from which the icebergs of the former type certainly come.

The only satisfactory explanation which occurs to me is that the irregular icebergs have, since their detachment from the glacier, happened to retain their original position, that is to say, with the rent and fissured surface uppermost, while the regular or cubical forms have, either in the act of calving or subsequently, turned over, and now show either the worn and smooth surface of the bottom or side of the glacier or else the plane of fracture, which would naturally also be comparatively level and free from fissures.

We saw, to our joy, that beyond these stretches of

icebergs, which nevertheless themselves extended a long way to the north, there was good navigable water, apparently as far as we could see. So after having laid down a course which would take us without difficulty to this open water, and then having chanted a pæan in honour of the occasion, we went down to the boats again prepared to work at high pressure in order to get through the doubtful part before the ice packed. This soon happens among these changing currents, and the prospect of being wedged fast for the night among these capricious icebergs was not to be thought of. So, as rapidly as our oars would take us, we pushed on through the narrow channels, in which we could see nothing but the deep blue water below us, with here and there a floe on its surface, the cliffs of ice on either hand, and high above our heads a slender strip of sky.

Though several times huge icebergs fell in pieces or turned over round about us, setting the sea in violent motion and making the air resound, we passed without mishap through the whole mass of them, which extended a long way north of the opening of the fjord. Once we had to seek a passage through a tunnel, which ran through a great iceberg, and from which the dripping water showered heavily down upon us. Whether all this congregation of icebergs comes from Bernstorff's Fjord, it is hard to

say, but it seems scarcely likely, though this fjord is one of those of the east coast which provide icebergs in the largest quantity.

Having passed Cape Mösting and the worst of the ice in good order, we spent the night on a small islet or rock lying in lat. 63° 44′ N. long. 40° 32′ W. As there was no flat ground of sufficient extent to accommodate our tent, which, besides, we had found too warm to sleep in the last few nights, we stretched our sleeping-bags upon the rocks. Just opposite us on the mainland was a sea-bird cliff thronged with gulls which made such a disturbance the whole night long that we heard them as we slept and wove them into our dreams. In order to be level with them, I paid them a visit next morning, which cost a certain number of them their lives, and provided us with a pleasant addition to our larder, which was already stocked with a fair quantity of game. These young gulls, which were just now ready to fly, are excellent meat for hungry folk like us.

We could plainly see that an ascent of the 'Inland ice' would be fairly easy from any point of the coast along which we were now passing. There were some numbers of what the Eskimo call 'nunataks,' that is to say, peaks or masses of rock projecting above the surface of the ice. The ordinary belief among Greenland travellers is that the ice round

these is always rough and fissured. But this is certainly only the case when the ice has a comparatively rapid movement and the rocks form obstacles which divert the stream, as it were, and lead to irregularities. In many cases, I am inclined to believe, these 'nunataks' tend on the other hand to make the ice smooth and even, as they check the

OPEN WATER AMONG THE ICEBERGS ON AUGUST 9

(By A. Bloch, from an instantaneous photograph, taken that day from a floe)

onward movement, which would otherwise be more rapid and give rise to the ordinary fissures and dislocations.

However, there was no need for us to take to the ice yet, as the water seemed to be open right away to Umivik, whence the distance to Kristianshaab would be considerably less. So we continued on our way north in water which grew more and more open,

and amid continual crashes from the icebergs and glaciers around us.

This particular evening we had a strange experience. We were between two icebergs, and just engaged in forcing two floes apart, when we heard a crash and saw a huge piece fall from the berg on our larboard side on to one of the floes on which we were standing, and which it partly crushed, and thereby made us a good passage through. Had we started to force our way through here a few minutes sooner, which indeed we were very nearly doing, we should undoubtedly have been annihilated. Curiously enough, this was the third incident of the kind which had happened to us.

On Kekertarsuatsiak, a little island lying at the mouth of Krumpensfjord, where we had our dinner, I climbed to the summit, which was very high, and gave me an excellent view to the north. The water seemed to be open and clear of floes as far as I could see in the direction of Umivik. There were a great many icebergs and glacier-fragments, especially off Gyldenlöve's Fjord and Colberger Heide. Seawards, too, I had a fine view, and here the ice seemed very much scattered. The high mountains by Umivik, and especially the conical peak of Kiatak, which marks our eventual destination, seem quite near, and yet, according to the map, they are still thirty miles

away. This fact I conceal from the others, who think the mountain is so close that we shall reach it to-night, and who, therefore, row with increased energy.

That evening we reached Kangerajuk, a point by Colberger Heide, where there was a strip of bare

THE VIEW TO THE NORTH FROM OUR CAMPING-PLACE AT KANGERAJUK

(*From a photograph*)

land between two enormous glaciers. It was all we could do to draw our boats high enough up, and we could find no ground at all to pitch our tent upon, so, as on the preceding night, we slept in our bags in the open air, on two slabs of rock which would just lodge us. As the dew was very heavy, we

passed a moist night, and amid a continual cannonade from the glaciers and the numberless icebergs which lay round about us.

Early next morning I was woke by a raven which sat and croaked a greeting from a crag opposite us. I found the glorious sunshine too tempting, and,

THE LAST DAY OF OUR COAST VOYAGE (AUGUST 16)

(By A. Bloch, from an instantaneous photograph, taken that day from a floe)

slipping unnoticed out of my bag, I took a photograph of the view to the north, with a huge arm of the glacier on Colberger Heide in the background, and in the foreground my two bedfellows, Sverdrup and Dietrichson, who were still deep in their morning sleep, and will, I hope, forgive the liberty of this

unceremonious presentation. In the distance is the peak of Kiatak, which is our goal for the day.

We now had the most splendid weather and the openest water that had hitherto fallen to our lot, and we pushed on fast. Dinner was particularly enjoyable, as a gentle breeze sprang up from the south, and we were able to hoist our sails and make good progress while we ate at leisure. I do not think I have rowed towards a mountain so obstinately distant as this Kiatak, a peak of some 2500 feet. We had now had it in sight for two days, and it seemed as far off as ever. At last, however, by the help of sails and oars, we began to draw in upon it. Now came a sea-fog to intercept us, but before the shore was quite enwrapped, we had come near enough to choose a landing-place and take our bearings accordingly.

CHAPTER XV

OUR LAST ENCAMPMENT ON THE EAST COAST

About eight o'clock on the evening of August 10 we landed in a thick fog at our last camping-place on the east coast of Greenland. Just as I stepped ashore a flock of birds of the snipe kind, possibly dunlins, rose and settled again on a rock close by. A shot brought down four of them, and the acquisition of these dainty birds was a good beginning. We had gradually learnt the art of unloading our boats with wonderful celerity, but the speed of this evening surpassed all previous records. All the work was done with keenness and despatch, and the zeal was not lessened by my promise to make some coffee. Balto was especially to the fore and reckless beyond measure. No sooner was he up on the rocks before he began to entertain us with an extract from the service after one of the clergymen away in Finmarken. His representation was excellent from an artistic point of view, but the performance was a sin which he never ventured to commit unless he were quite sure of his life. To-day, too, he indulged

in an oath or two, which was the first time for a long while. He even went so far as to give back to Ravna the Lappish Testament which he had borrowed and had in his possession for a long time, his idea being that he had no further use for it now. But when Sverdrup advised him not to be too cocksure, and warned him that there might be many a slip yet before the west coast was reached, he became a little more doubtful, and we had at least no more swearing.

In my diary for this day I wrote among other notes :—'While the boats were being unloaded I set about making coffee, this being the second warm meal we had had during the twelve days of our voyage up the coast. Supper and the coffee were enjoyed on the rocks down by the boat amid general satisfaction, and even the Lapps seemed contented. We were conscious of having reached one of our destinations and of having overcome one of our difficulties. Certainly the worst part of the journey still remained, but we should have firmer ground to go upon, more trustworthy ice to deal with, no drifting floes, and no boats liable to be crushed every moment. The Lapps especially would be much more at home on the snowfields of the "Inland ice" than among the capricious floes.'

'The landscape round about us would certainly

not attract everyone in the same degree as it did us. We sat on grey gneiss rocks and had on either hand a glacier running into the sea. The fog had lifted to some extent, and now and again we could see parts of the mountain Kiatak. In the water floated scattered fragments of glacier-ice. The whole scene was a study in grey and white touched here and there with blue, a sky of grey, a leaden sea with white spots of floating ice, grey rocks with patches of white snow, and blue in the crevasses of the glaciers and in the icebergs out at sea. But the dulness of the landscape found no reflection within us. This evening we retired to rest in a singular state of elation, after having secured a comfortable site for our tent high up on the rocks.'

The next day, August 11, rose gloriously bright and fine. From our tent we could see the blue sea stretching away to the horizon, its surface broken here and there by the wandering blocks of ice, and its waves, raised by the gentle morning breeze, dancing and glittering in the sunshine. To the south we saw Colberger Heide rise out of the water with its mantle of snow and ice and protruding crags. In front of us or to the east was the huge conical mass of Kiatak stretching from the blue sea at its foot to the pale, cloudless August sky above. Beyond this and to the north lay the white snow-

fields of the 'Inland ice,' which grew bluer and bluer and more and more rent and scarred as it fell towards the sea, and ending in lofty cliffs of seamed and fissured ice. From these great blue walls come all the icebergs and smaller blocks that are floating in the water round. Above, the snowfield is a simple

OUR LAST ENCAMPMENT ON THE EAST COAST ON THE MORNING OF AUGUST 11

(*From a photograph*)

white expanse, broken only now and again by the blue streak which marks a wide crevasse; slowly it passes away inwards and out of sight, ending in a white ridge which shows almost warm against the green-blue sky.

Nature has not many sounds in these parts.

Only the petulant screams of the terns pierce the ear as one stands and gazes at the grand and simple beauty of this desolate landscape. From time to time, too, one hears from the glaciers, whenever a new fissure forms or some mass of ice is jerked suddenly forwards, a sullen rumble which has the most striking likeness to a cannon shot. If for a moment one forgets one's surroundings, or hears these reports in one's early morning sleep, the deception is singularly complete.

But we have, in fact, no time to spend in the contemplation of Nature's wonders. The sun has long been calling us to work, so we must get our breakfast over with all speed. Most of the party have to go to work at once to scrape the rust off the sledge-runners and then off the steel-shod 'ski.' In their present state, after the ravages of salt-water and damp, they are all absolutely useless. Dietrichson's business is to make a map of the bay, the point and the adjacent glaciers, while Sverdrup and I are to set out upon our first journey on the 'Inland ice.' We must needs discover if an ascent is possible just here, and which will be the best course to take. We were indeed consumed with impatience for the first sight of this undiscovered country, in which, as we imagine, the human foot has as yet never trodden. But there are certain things to be done before we

start. We must take some astronomical observations, now that we have the sun, and some photographs too, as the weather is so favourable.

At last, now that the sun has passed the meridian and we have taken the altitude, we are ready to set off. With our bag of victuals, our glacier-rope, and ice-axes we start up the stretch of mountain-side on which our tent stands, and which lies like an island between two streams of ice. We were soon at the head of it and there found a small moraine from which we got a good view over the ice in front of us. We could now see that it was not so level as it had looked from the sea, as the white surface was seamed with numerous crevasses on every side. They were especially plentiful in the two streams of ice which lay on either side of us, one to the north and the other to the south. After we had tried the northern branch and found it altogether impossible, we could see that our only course was along the ridge which lay between the two arms. Here we advanced a good way over solid ice. At first it was hard and rough with a rugged surface which crunched beneath our feet and cut the soles of our boots unmercifully. Then we reached softer and wetter coarse-grained snow in which we sank to some extent. But it was not long before we came to crevasses, though at first they were narrow and harmless and easily covered in the

stride. Then they grew broader and opened a view to depths unfathomable. These were not even to be jumped, and we must needs skirt them either to the right hand or to the left.

As most of my readers doubtless know, the crevasses generally run across the current of the ice-stream. They are due to the passage of the ice over ridges and changes of level in the glacier-bed. The lower layers are compressed, while the upper are parted by the strain and show a long, continuous rent which reaches nearly to the bottom of the whole mass of ice, and lies parallel to the ridge which has caused the fracture. The numerous inequalities in the bed and the downward movement of the mass of ice give rise to fissures corresponding in number and size, all of them, as a rule, running in about the same direction. Again, if the glacier, after passing a cross-ridge, sinks into a trough or hollow, where the course of the ground thus becomes concave instead of convex, all the fissures are closed up and filled with snow and water, which freezing together gradually efface them.

For a long while we got on fairly well, partly because we could keep along the crevasses northwards, which did not take us much out of our course, and partly because they were in themselves not very long, and soon narrowed sufficiently to let us jump over

them. Often, too, we crossed them on snow-bridges or on narrow strips of ice, left by the incomplete severance of the mass, and forming diagonal bridges across the chasms, the bottomless blue depths of which we could see on either side as we passed over. As long as the covering layer of snow was thin, there was no danger for us, as we could see when we had firm ground beneath our feet and when it was necessary to be careful or quicken our steps. We had the rope round our waists, of course, and kept it tight between us in Alpine fashion in order to minimise the consequences of a fall.

But as we get farther up the snow increases in depth, we sink to our ankles, progress grows heavy, treacherous cornices overhang the crevasses, and sometimes the fissures are completely covered. We have to grope and poke before us with our staffs, or we soon find ourselves only separated from the uttermost depths by a few inches of wind-driven snow through which the pole falls almost by its own weight. We neither of us had bad falls, though it was nasty enough now and again when one or other of us sank to the armpits and felt his legs dangling in space. This was a performance of which we soon got tired, and as soon as we could we changed our line and moved farther south, where there was less snow and not so many crevasses. Here we could

push on with less care and made fair progress. In time the crevasses ceased almost entirely, but to make up for this the coarse, wet snow was here deeper than ever, and it was unconscionably heavy work to plod along, sinking far above the ankles at every step. We now bitterly regretted that we had not brought our 'ski' or Canadian snowshoes with us. We had the Norwegian 'truger' on our backs certainly, but

FALL INTO A CREVASSE
(*By E. Nielsen, from a sketch by the Author*)

they were of no use, as the bearing-surface was too small for this kind of snow.

We had ascended pretty gradually since we left the bare rock at a height of about 400 feet. In front of us to the north-west was a ridge, which we thought would give us the view we wanted into the interior could we only get there. We looked wistfully towards it, but the way was long, and the snow,

as I have said, in a villanous state. We are hungry, too, and as the sun is still high enough to let us think of bodily enjoyment, we put our ' truger ' on the snow, stamp holes in front of them, and thus make ourselves warm and comfortable seats in the sunshine. It was a true relief to get a little rest like this. We set vigorously to work on our pemmican and biscuits, scanning the landscape meanwhile and enjoying the brilliant weather and cloudless sky. The reflection of the sun from the white surface of the snow troubles our eyes to some extent, and unfortunately we have left our spectacles behind in the camp and have no protection against the glare.

To the south in front of us the furrowed and riven surface of the broad ice-stream falls away seawards. We know that there are peaks and rocks below, but they are hidden from us as we sit here, and we see the blue sea stretching from the edge of the ice right away to the horizon. There is no real floe-ice in sight, nothing but a few scattered fragments here and there which come from the glaciers. How different things were a few weeks ago when we drifted by. Then the ice lay in a broad belt stretching from the shore some twenty or thirty miles out to sea, and so closely packed that not even our little boats could find a passage through. Now a whole fleet could make its way to land at any point it pleased, and

without touching a single floe. Later in the day, when we had mounted higher, we could see right away to the mountains by Cape Dan. The surface of the sea was everywhere smooth and bright and there was no drifting ice in view.

But our dinner is over, and we have no time to lose if we are to reach the ridge before sundown, which is the time one gets the clearest distant views over the surface of the snow. So we trudge off again with the renewed vigour which only food and rest can give one. The snow gets worse and worse. There was now a thin crust upon it, the result of the last few days' frost, and this took it out of us terribly. It let us through pitilessly every time we trod upon it, and hung about our ankles as we tried to draw our feet out again. This kind of thing will beat the strongest; and dead-beat we certainly were, more especially because our legs were altogether untrained. It was many months since they had had any exercise, except for a little hauling of the boats about the floes.

But there was no mercy for us. We must push on in order to reach the ridge as soon as possible, as it looked as if we should have rain and thick weather up there if we put it off till too late. The sky already seemed uncomfortably grey and dull along the upper edge. So we redoubled our efforts, and

determined not to be beaten. It would be too absurd to arrive up there just late enough to see nothing, and be obliged to wait there till we could get a view, or else come up again next day. So the pace was increased and the stride lengthened till Sverdrup—who is short in the leg—came near to straining himself in his efforts to keep up with me and make use of the foot-holes which my long legs made in the snow. I could hear him cursing my seven-league boots till he must have been blue in the face with the exertion. At last, after we had thought again and again that we were there, but found the ground still rising in front of us, we reached the top of the long sought ridge. But, alas! alas! life is full of disappointments; as one reaches one ridge there is always another and a higher one beyond which blocks the view. So it was here, and we must go on; we must inspect the ice farther in, for that is the object of our expedition. No doubt we are justified in supposing that we have already passed the worst ice in the ten miles or so we have gone to-day, but it may well be that there is still difficult ground beyond. So we start off again as fast as our legs will take us towards the highest point of the ridge in front. There seem to be a number of crevasses, but they are not of a kind to stop us. It now began to rain a little as we were

climbing the rather steep slope in front of us. The going is heavier than ever, and we sink in the snow above our knees. Rain and fog may threaten as they please; we have to stop now and again to get our breath, exhausted as we are. This time, as far as we can see, we are not to be fooled; if only the rain will let us, we seem likely to get a good view inwards. Already we can see some way, and I even get a glimpse of a projecting peak that has not been visible before. So we stride on with greater eagerness than ever.

At last we are on the top, and are richly rewarded for all our toil and tribulations. The great white snowfield lies before us in all its majesty. The rain is still falling in the form of fine dust-like spray, but it is not enough to hinder us from seeing all necessary detail even at a considerable distance. The whole surface seemed smooth and crevasseless quite to the horizon. This we had expected, indeed, but what we had not expected was the number of 'nunataks,' or peaks, small and large, which protruded from the great field of snow for a long distance inwards. Many of them were covered and quite white, but many others showed cliffs and crags of bare rock which stood out in sharp contrast to the monotonous white ground, and served as welcome resting-places for the eye.

We reckoned the distance to the farthest of these peaks to be some twenty-five or thirty miles, and we did not suppose that we should be able to reach them for many days. The gradient was even and slight as far as we could see; but the going was anything but good, as we had already learnt; and the last bit especially had been desperately heavy. If the nights were not likely to be frosty, our prospects were not brilliant. But the barometer showed that we were now some 3,000 feet above the sea, and at another couple of thousand feet or so we felt sure of frost, at least at night. Poor unsophisticated wretches, who wished for cold in the interior of Greenland!

But our object was attained. In spite of 'nunataks,' and in spite of our beginning the ascent from the very sea-level, we had found the passage of the ice quite as simple and straightforward a business as we had ever ventured to hope. By this time we are hungry again; the evening is far gone; the sun must have set long since, though the rain clouds have hidden it from view, and it is not too early for us to sit down upon our 'truger' and bring out our provision-bag once more.

Supper being over, we have to contemplate our return. We are at least ten, if not fifteen miles from camp. There is no sense in going back the way we came; we came out for a reconnaissance, so

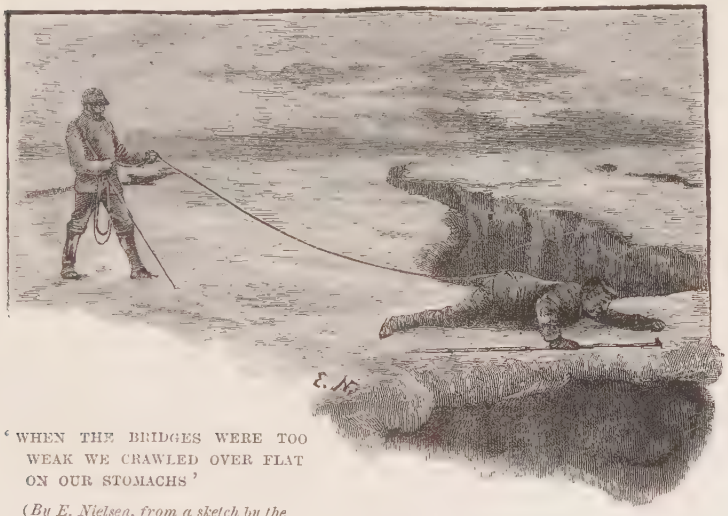
we must try and discover whether there is not an easier route by some other line. Especially we thought it possible that a mountain which lay to the south of us would give good access to the snow. We should be able to get up to a good height with firm ground still beneath our feet, and we should avoid the worst of the glacier-ice. It was certainly late in the evening for exploring purposes, but there was no help for it ; we must explore and put up with the night meanwhile.

As the snow up here was at its worst and loosest, we put our 'truger' on, to see whether they would not be of a little use to us, and they really were. So we set off refreshed upon our homeward way, steering for the mountain that lay to the south. But darkness came on quickly and we had not gone far before it grew uncomfortably difficult to see the crevasses at a satisfactory distance. As yet, indeed, there were not many of them, but we must be prepared to meet with more than enough of them before long. We have to keep along the top of the ridge, which just here runs between two depressions which we have on either side. By this means we keep fairly clear of them. For a while all goes well ; the snow is better, so good indeed that Sverdrup takes his 'truger' off. We already see our mountain at no great distance, and here we hope to find water,

and mean to have a good rest and stretch our weary limbs on the bare rock. We longed indescribably for this firm ground, and we were sure it could not be far off now. But how often are one's reckonings altogether upset when one has to do with ice, whether it be in the form of floe or glacier. We had not gone many steps before we began to suspect that our 'not far off' might prove to be quite far off enough, and even more too. We were now met in fact by longer and nastier crevasses than any we had yet seen. At first we managed pretty well, and with my 'truger' I found I could jump with greater certainty than I had done before without their help, and could venture more boldly on to the snow-bridges, as they did not let me through so readily. When these bridges were too weak to tread upon, we had recourse to a more cautious method, and crawled over flat on our stomachs.

But presently the crevasses became so broad that bridges were not to be expected, and we had to go round them. Round them we went too with a vengeance, following them often by the half-hour, sometimes upwards, sometimes downwards, but they grew longer and longer still. At last we reached one broader than all its predecessors, and longer too, as we were destined to learn. This we determined to follow upwards, as we thought that there was most

chance above of finding its end. This had been the case with most of them, but this time we were thoroughly sold. We went on and on, and on again, farther and farther from our goal; the peak of our mountain grew fainter and fainter in the darkness, but the crevasse remained as broad as



'WHEN THE BRIDGES WERE TOO WEAK WE CRAWLED OVER FLAT ON OUR STOMACHS'

(*By E. Nielsen, from a sketch by the Author*)

ever. There were no bridges, and it was so dark that we could see no sign of change ahead. There was nothing for it but patience, which is a jewel indeed on such occasions. But it is a long lane that has no turning, and though we still went on and on we came to the end at last. We now promised ourselves that this was the last time we would follow a crevasse upwards. The other way at least brought

us nearer to the mountain, where we were certain to find water for our parched throats.

By this change of tactics we made greater progress, and we now had the pleasure of seeing our goal loom nearer in the darkness. We had not many more steps to go when we saw in front of us a dark stripe or band in the snow. At first we thought it was another crevasse, even now separating us from the rock, but to our indescribable joy we discovered that it was water, glorious running water. We soon had our cup out, and drank, and drank, and drank again, and revelled in it, as only those can who have waded the whole day long through deep, wet snow without a drop of any kind to wet their lips. I scarcely think there is a greater enjoyment in life than plenty of good cold water when one is ready to perish of thirst. If it is ice-water, as it was here, one drinks till the numbness of one's teeth and forehead bids one stop, then one rests a bit and drinks again, slowly and solemnly drawing the water in, so that one may not have to stop again too soon—the enjoyment is in fact divine. When on this occasion we had drunk as much as we were good for, we filled our cup and flask, went on the few paces that remained to the cliffs, and finding a comfortable seat on a jutting rock, where we could stretch our limbs at will and get a good support for

our weary backs, we turned to the provision-bag again. What delight we found here too! A tramp all day in the snow like this produces both hunger and fatigue, and we had more than enough of both to make existence supremely delightful as we lay there and devoured our pemmican, chocolate, and biscuits.

But presently it began to rain, which was not quite so delightful, and the darkness had increased so much that we could now not see more than two or three paces in front of us. But we had a good way to go to the tent, so we had to start off again. We kept to the ice along the edge of the mountain side, where the surface was tolerably smooth, as it often is along the rocks, where the ice has not much movement, or is even frozen fast. For a time progress was easy, but then the incline grew so steep and slippery that it was all we could do to find and keep our footing. Still more uncomfortable did things become when we found more huge crevasses lying in our path. In the darkness we could just see the great chasms which lay ready to receive us as soon as we made a false step or allowed our feet to slip. The rocks by our side were so precipitous that there was no escape that way, and we had to follow the line we were now taking. Without mishap we reached a rock which jutted out into the ice. Here

below us, and between the main mass of the mountain and the glacier, was an enormous 'bergschrund,' or chasm, some thirty or forty yards across and abysmally deep; in the ice in front we could just see a number of crevasses, the width of which we could not determine, but they were evidently more than big enough to stop our progress. There was nothing for it but to take to the rocks up a gully which came down just by us, by this means skirt the projecting point and 'bergschrund,' and see if there were a more practicable course down below. It was a true satisfaction to have the firm rock beneath our feet again, and to feel the pleasure of a good foothold. In spite of the heavy rain which wetted us to the skin, we sat down for a long rest upon some boulders. We were now inclined to wait till dawn for a further attempt upon the glacier, as we felt sure that it would be full of crevasses further down, and in the darkness we might easily get completely fixed or even come to grief for good and all. At last came daybreak, red and glowing in the east and spreading a warm flush over the sky and landscape. Beneath us lay the glacier, which now looked more practicable than we had expected. We chose the line which seemed easiest, and set off once more. Though we now crossed the glacier not far from the edge which falls precipitously into the sea, the ice was not so full

of crevasses and impassable as it had been higher up. It was rough and rugged enough in its way, full of upstanding pinnacles and sharp ridges divided by clefts and hollows. It was often quite sufficiently hard work to cross these latter, though they were not deep ; but the real long, bottomless crevasses, which we had found up above, were not abundant here, and occurred only in certain parts. The reason why there are so few of these down here must be that they are filled with water, which freezes and turns them into mere furrows and irregularities in the ice.

Our difficulties were now soon at an end, and after a couple of hours' walking we came within sight of the camp. It was five o'clock in the morning, and, as we expected, all our comrades were sound asleep. Our first business was to get hold of some food and make the most of what our larder provided. This was an indulgence which we thought we had fully deserved after our tramp of eighteen or twenty miles. Then we crawled into the sleeping-bags, stretched our tired limbs, and soon floated into dreamland, well satisfied with this our first excursion on the much discussed and much dreaded 'Inland ice' of Greenland, which we had always heard was so impossible of access, and still more impossible to traverse. As we had expected, we had not met with

these impossibilities, but the world would no doubt say that we had had the devil's own luck with us, and had reached our goal with much more ease than we deserved.

Before we were ready for our final start, however, we had certain preparations to make which would take a considerable amount of time. Our boots especially needed thorough overhauling and repair, as the excursion of the day before had taught us in the most emphatic way that the 'Inland ice' demanded no common strength and substance of sole. The steel runners of the sledges and 'ski,' too, had to be still further scraped and polished; all our baggage had to be repacked, and everything that we were going to cache here set apart. So for the next two or three days all the members of the party might have been seen sitting about on the rocks outside the tent, busily occupied in the various arts of peace, that of the cobbler taking a particularly prominent place. It was a strange sight to see these figures, which outwardly had very little in them to remind an observer of the cobbler's stall, sitting here amid these wild surroundings with boots between their knees, and plying meantime the awl, thread and bristle with as much apparent dexterity as if they had done nothing else all their lives.

But leaving these industrious workers undis-

turbed at their useful tasks, we will meanwhile devote the time to a short review of the previous attempts that have been made to penetrate to the mysterious interior of Greenland, and to a discussion of the results likely to be gained by a successful solution of a similar undertaking.

A COBBLER'S STALL ON THE EAST COAST
(*From a photograph*)

CHAPTER XVI

PREVIOUS ATTEMPTS AT EXPLORATION OF THE 'INLAND ICE'

It is not so much the wild beauty of its rugged coast-line as the glaciers which lie buried in its numberless fjords, and the great mantle of snow and ice which covers its interior, that give Greenland a position of its own among the countries of the world. Wherever the traveller or explorer leaves the outer fringe of inhabited or habitable shore, and following the line of some fjord or valley, seeks to penetrate inland, at every point he is sooner or later met, at the latest perhaps at a hundred miles or so from the outer coast, by the external margin of the great 'Indlandsis,' the largest tract of continuous ice to be found in the northern hemisphere.

Here Eskimo and Scandinavians alike have been forced to stop, and of what lay behind this huge frozen barrier, which was generally considered insuperable to human effort, only fancy has been able to form a picture. Thus at all periods, since Greenland first became known to the wandering Icelanders

to this very day, a veil has rested, as it were, over this strange interior, which no one has hitherto succeeded in completely drawing away. Behind this veil imagination has been allowed to play at its will, and, like all that is mysterious and inscrutable, the interior of Greenland has exercised a peculiar attraction upon the minds of men.

It was the Eskimo, as far as we know, who first peopled Greenland, and who were, therefore, the first to find their way to the 'Inland ice.' How long ago this was it is impossible to guess even approximately, but the hypothesis that their occupation took place no more than from five hundred to a thousand years ago is, as I shall try to show in a later chapter, scarcely tenable.

The Eskimo came from regions which lie to the west, on the far side of Baffin's Bay and Davis Strait. Their old home was covered by no field of ice or snow, and the interior was habitable or inhabited. In Greenland, on the other hand, they soon found that at every point their further advance was stopped by a barrier of ice. This check no doubt prevented them from making any real attempt to penetrate into the interior, but it did not prevent them from making the same unknown interior the scene of all the traditions which they brought with them of dealings and intercourse with the inland folk of the regions

they had lived in before. These people must have been mainly the Indians of the northern coast of North America, and they have in course of time come to be the 'Inland Folk,' or 'Torneks,' with whom Eskimo tradition has peopled the interior of Greenland, and whom it has at the same time endowed with various wonderful and supernatural qualities. To the same origin, again, we must undoubtedly ascribe the legends still extant of migrations across the 'Inland ice.' They must really be migrations undertaken in the smaller countries to the west which the Eskimo previously inhabited, the traditions of which have been subsequently transferred to Greenland and then localised in one spot or another.

But though the Eskimo have in these tales and legends peopled the interior of Greenland with a race of 'Inland folk,' and various other mysterious and supernatural beings whose qualities and constitution we will not take upon ourselves here to discuss, they do not seem to have formed any general and definite idea of the real nature of this same interior. Nevertheless in those parts where reindeer are to be found the native hunters would continually come into close contact with the outer edge of the 'Inland ice,' and as they would also often find their way farther into the 'nunataks,' or projecting peaks, to which the reindeer resort, and from such peaks would see

nothing but a limitless expanse of ice and snow stretching as far as the eye could reach, it is not unreasonable to suppose that they have taken it for granted that the whole country is similarly covered.

The Norwegians who found their way from Iceland to Greenland some nine hundred years ago, and were in all probability living on the west and south-west coasts as recently as in the fifteenth century, appear to have very soon formed a comparatively correct notion of the nature of the country and the 'Inland ice.' That this was the case we can judge from the remarkable old treatise which I have already quoted more than once. In this treatise, 'Kongespeilet,' which we may feel sure expresses with fair accuracy the general opinion entertained at the time, the following passage occurs :—

'But seeing that thou hast asked whether the land is free of ice or not, or whether it is covered with ice like the sea, thou must know that that part of the country which is bare of ice is small, and that all the rest is covered with ice, and that people therefore know not whether the country be large or small, seeing that all mountains and all valleys are covered with ice so that one can nowhere find an opening therein. And yet it would seem most credible that there should be an opening either in

the valleys that lie among the mountains or along the shores, by which animals can find their way, since otherwise animals could not wander hither from other lands unless there be an opening in the ice and land free from ice. But oftentimes have men tried to come up into the land upon the highest mountains that be found there and in divers places, in order to see round about them, and to discover if peradventure they could find land which was bare of ice and habitable, and they have nowhere found such, but only that on which people now dwell, and for a little way along the very shore.'

But the old Scandinavian colonies decayed and died away; the sea route thither was forgotten, and at the same time all the knowledge about the country that had gradually accumulated was lost. So in the seventeenth century we find the wildest ignorance prevailing on the subject of Greenland. The channels of Frobisher Strait and Beare Sound were drawn right across the peninsula, and in a map dating from the middle of the century and by the hand of one Mejer it was actually cut up into an archipelago of islands, which were declared to be thickly covered with wood, 'much in the same way as the country round Bergen in Norway.'

In the year 1721, however, the Norwegian pastor, Hans Egede, made his first voyage to Greenland to

search for the descendants of his countrymen, who, as he thought, might still exist there, and to carry to them in that case the Gospel of Christianity.

Hans Egede. 1721

Egede could discover no countrymen of his own indeed, but he found Eskimo, and they he considered might also well have need of the one true doctrine. This was the beginning of Egede's own missionary work, and of the recolonisation of Greenland. The knowledge of those parts of the country which lay immediately by the sea now soon increased again, but as to the interior there seem to have prevailed, in Europe at least, for a long time yet, some most remarkable ideas, ideas which bore an unfortunate result in the Paarss expedition, which I shall presently describe.

It was not long before people began to turn their thoughts to this strange interior, and to the idea of crossing the country to the east coast, where, as I have said in an earlier chapter, it was now generally supposed that the old Scandinavian colony 'Österbygden,' or the 'Eastern Settlement,' had been situated. Thus in 1723 Egede received from the manager of the Bergen company which had taken the new Greenland enterprise in hand, a letter of instructions, which ran thus: 'It seems to us quite advisable, if indeed the thing has not been done already, that a party of eight men should be told off

to march through the country, which according to the map would appear to be only from eighty to a hundred miles across at its narrowest part, for the purpose of reaching, if it be possible, the east side, where the old colonies have been, and on their way to look out for forests and other things. If this is done, as we should much like, the thing must be undertaken in the early summer; and furthermore the men must be provided each with pack, provisions, and gun, as well as with a compass, in order that they may be able to find their way back again; and, thirdly, the men of the party must both look out warily for the attacks of savages, in case they should fall in with any on the way, and must also make all possible observations, and wherever they pass must raise piles of stones upon high places, which will serve as marks both for this and future occasions.' This is an amusing instance of the achievements of colonial policy under the guidance of geographers of the study and easy chair.

Egede was wise enough, however, to answer that he could see no possibility of carrying out the scheme to advantage. The maps were not to be trusted, since, as he says, 'within those limits in which I have hitherto travelled I find so much error.' And further he maintains that the projected land-march will be very difficult and laborious, on account of the high

cliffs, the mountains of ice and snow, and other impassable tracts of ground.

But by degrees, as the settlers began to move about and to see more of the country, and at the same time profited by the narratives and descriptions of the natives, they acquired a more correct idea of the true nature of the interior. Thus in 1727 we can see from a letter sent to Europe from Godthaab that people then understood that 'following the backbone or central ridge of the country from south to north was an appalling tract of ice, or mountain covered with ice.' Enterprise too was so far awakened that in the next year, 1728, it was thought possible that 'some young healthy Norwegians who were accustomed to traverse the mountains during the winter on their "ski" in search of game might explore a large part of the country in all directions.' This scheme, however, to which I have referred in an earlier chapter, was not destined to be realised for a hundred and sixty years.

When we thus see that in certain quarters at least the aspect and nature of the country was tolerably well understood, it must strike us as nothing less than surprising that in 1728 Major Claus Enwold Paarss, the first and last titular Governor of Greenland, was instructed 'to spare no labour or pains and to allow himself to be deterred by no danger or

Paarss, 1728

difficulty, but to endeavour by all possible means and by one way or another to cross the country to the aforesaid "Österbygd," for the purpose of learning whether there still exist descendants of the old Norwegians; what language they speak; whether they are Christians or heathens, as well as what method of government and manner of life prevail among them.' Paarss was furthermore desired to note among other things 'what is the true nature of the country; whether there is forest, pasturage, coal, minerals, or other things of the kind; whether there are horses, cattle, or other animals suited to the service of man.'

For the purposes of the expedition there were sent out from Denmark eleven horses, one captain, and one lieutenant, while Paarss was ordered to take for his men 'the most intrepid among the garrison at Godthaab.'

It is obvious, of course, that this undertaking, which is the first and in its organisation the most elaborate of all expeditions sent out to penetrate to the interior of Greenland, could lead to no successful result in the form it originally assumed. The horses died, some on the voyage out and some at Godthaab, and it was soon discovered that a ride across the continent was not a particularly easy task.

Nevertheless in the following year Paarss actually made an expedition to the 'Inland ice.' On April 25, 1729, at noon, 'the Governor embarked in the name of the Lord and in company of his assistant Jens Hjort and Lieutenant Richart, together with five men, and hoisted sail amid storm and driving snow.' They sailed 'far into Ameralikfjord,' where, continues Paarss, 'I took in return for payment two of the country folk dwelling there to guide us on our way.' It is rather a remarkable coincidence that this first expedition should have attempted to reach the ice in the same fjord where the last expedition left it.

His exploration of the ice itself Paarss describes in his report as follows: 'After we had marched for two days we came at noon on the third day to the edge of the "ice-mountain;" but when we had ascended this and advanced upon it for two hours at our great peril, all further progress was denied us by reason of the great chasms which we found thereon.'

These chasms he describes at length, and then proceeds: 'As soon as we saw that no further advance was possible we sat ourselves down upon the ice, with our guns fired a Danish salvo of nine shots, and in a glass of spirits drank the health of our gracious King on a spot on which it had never been drunk

before, at the same time paying to the "ice-mountain" an honour to which it had never before attained; and after we had sat and rested ourselves for about one hour we turned back again.'

Among the most remarkable things which he saw Paarss first mentions 'the great stones lying upon the ice,' which, he opines, must indubitably be carried there 'by great and violent winds and tempests, which there have incredible fury; for the "ice-mountain" is to look upon just as when one beholds the wild sea, where no land is to be seen, since here also there is nothing else in view but sky, and the bare ice. Furthermore, the ice on which we walked was sharp-edged like white sugar-candy—so much so that were any advance possible on the same "ice-mountain," one must have soles of iron beneath one's shoes, so bad was the ice to walk upon.'

Such are the most important features of Paarss' own account of his exploits and observations on what he calls the 'ice-mountain,' and it is plain that the results of the expedition bear no sort of proportion to the grandeur of its preliminary organisation. It is strange, indeed, that Paarss, who ascended the ice not far from the very spot where we came down, should not have discovered some passage by which he could have pushed into the interior had he been so minded.

On May 7 the party returned to Godthaab from this 'dangerous and very laborious expedition.'

This first expedition can, however, hardly have been quite unproductive of results. Though it probably did not to any appreciable extent modify the generally accepted view as to the nature of Greenland as held in the colony itself, whose inhabitants had already acquired a good deal of information on the subject, it cannot have failed to have considerable effect at home in Copenhagen, seeing that the next expedition organised by the Danish Government was not sent out till 1878, or a hundred and fifty years later.

In a book which was published in 1746 we read, as I have already said in my chapter on 'ski,' in connexion with a ship's captain whose business took him into Greenland waters, and who had attempted the exploration of the 'Inland ice,' that 'the abovementioned skipper has tried in all manner of ways, and even with the long foot-boards, of which, as is known, the Lapps and others make use for winter travelling, but has not been able to penetrate very far into the country; and after he had lost one of his men who ventured some way on before the others, and sank down before their eyes, so that they could hear his cries and lamentations, but could not go to his help, he was constrained to turn back without this man and without hope of ever being able to advance

farther.'[1] This passage is interesting not only because it contains the first mention of the use of 'ski' upon the 'Inland ice,' but also because it records the only known instance of loss of life on the same ground.

Dalager, 1751

The first expedition to advance any way into the interior of which we have an account was undertaken in 1751 by one Lars Dalager, a merchant of Fredrikshaab, who reached two 'nunataks' which lie some five or ten miles from the outer edge of the ice-field, and on the south side of the glacier which is known in Greenland and Denmark as 'Fredrikshaabs Isblink.' This excursion he has described himself at the end of a book which he wrote in Greenland entitled 'Grönlandske Relationer . . . sammenskrevet ved Friderichshaabs Colonie i Grönland, Anno 1752.'

Dalager had gone towards the end of August 1751 up to the edge of the ice at a spot a little way to the north of Fredrikshaab. 'My errand,' he writes, 'was only to divert myself with my gun, but on this occasion it was not long before I had resolved to set out on a journey across the "ice-mountain" to "Österbygd," to which determination I was led by a

[1] Johan Anderson, *Nachrichten von Island, Grönland und der Strasse Davis* (Hamburg, 1746), p. 158. My own extract is from Captain J. A. D. Jensen's *Om Indlandsisen i Grönland* (Copenhagen, 1888), p. 34.

new discovery made in the preceding month of July by a Greenlander, who had been so high up while out hunting that he could see distinctly, as he said, the old Kablunak mountains on the eastern side.[1]

'This moved me, as I have said, with a desire at least to see the land, like Moses of old, and I took with me the aforesaid man and his daughter, together with two young Greenlanders. We set out upon our journey after having already advanced thus far into a fjord by the southern side of the glacier.'

The party left the fjord on September 2, reached the edge of the ice next day, and on the day following, 'in the morning,' says the writer, 'we committed ourselves to the ice, purposing to reach the first mountain-top, which lies in the middle of the ice-field and which was five miles distant from us. So far the ground was as flat and smooth as the streets of Copenhagen, and all the difference that I could see was that here it was rather more slippery, but on the other hand one had not to wade out to the sides in the slush in order to avoid being overthrown by the posting-horses and carriages.'

The next morning they all went on 'to the upper-

[1] *Kablunak*, or more correctly *Kavdlunak*, is the Eskimo name for Europeans, or now more especially Danes. The mountains here referred to would be those in the districts inhabited by the old Scandinavian colonists, and in this particular case those of the 'Österbygd' in question.

most mountain on the ice, called Omertlok, to which it was also about five miles, but here the ice was very rough and full of cracks, for which reason it took us seven hours to reach it.' From the top of this mountain they had a wide view inwards, and in the distance above the north-east horizon they saw some peaks, which Dalager took to be mountains on the east coast of Greenland, but which have subsequently been identified as 'nunataks' lying some twenty miles or so from the western edge of the ice, and which are now known as 'Jensen's Nunataks.'

When they were on the top of this summit, Dalager continues, 'they began to fall into admiration at the great prospect in all directions, and above all at the mighty ice-field which stretched away up the country and across to the "Eastern Settlement," where the mountains like those on which we stood were covered with snow.' They remained on the peak till seven o'clock in the evening, when Dalager 'ended the day with an address to the Greenlanders, which treated of the inhabitants of Österbygd in old times and of their physical as well as spiritual welfare. Meanwhile the sun went down and we descended the mountain some way and then laid ourselves down to rest.'

Dalager would have been glad to push farther in, but, as he says, 'I was constrained for many reasons

to set my face towards home, one being very important, that we were now going no better than barefooted. For, though each of us was provided with two pairs of good boots for the journey, yet they were already quite worn out by reason of the sharpness of the stones and ice. And as the handmaid whom we had in our company had, to our great misfortune, lost her needle, we could get none of our things mended. For this cause we were much embarrassed, though we consoled each other with laughter as we contemplated the naked toes peeping out from the boots.'

On the next day therefore, September 6, they turned homewards, and on the evening of September 8 they reached the camping-place down by the fjord, and, concludes Dalager, 'I cannot here forbear to mention with what unusual appetite I emptied that evening a whole bottle of Portuguese wine, after which I slept on till the following day at noon.'

Dalager also gives a description of all that he saw in the interior, in the course of which he expresses far less dread of a journey upon the 'Inland ice' than many of his successors have done even down to the present day. He says among other things, 'To give my opinion about the great plain of ice which prevents our having any communication with "Österbygd," I believe that in respect of the

surface a crossing is practicable, inasmuch as it seemed to me that the "ice-mountain" is by no means as dangerous as folk have proclaimed it to be, and that the chasms are not so deep as has been asserted.' But on other grounds he thinks the crossing to be impracticable, and he adds subsequently: 'But nevertheless it will be impossible to succeed in making such a journey, for the reason that one cannot drag with one as much provision as one should reasonably be provided with on such a march; and further on account of the intolerably severe cold, in which I think it all but impossible that any living creature could exist, if he were to encamp for many successive nights upon the "ice-field."' This is followed by a remarkable description of the cold, which was so severe that, though they were all well clad and none of them 'particularly tender,' their limbs would nevertheless 'at once shrink up, as it were,' as soon as they sat or laid themselves down for an hour or so upon the rocks. 'I had for my part,' he says, 'two good vests of wool for underclothing, and over them a pelisse of reindeer-skin, while at night I wrapped myself in a fine cloak with double lining, and, moreover, put my feet into a bag of bear-skin; but with all this I was unable to retain the warmth. I can say that of all the bitter winter nights on which I have camped on the ground in

Greenland, none have so much distressed me by reason of the cold as these nights early in the month of September.'

This description, which has hitherto been little noticed, contains the first record known of the extreme cold of the 'Inland ice,' which we too experienced in the very same month.

From Dalager's time till well into the present century very few Europeans, as far as we know, can have visited or ascended the 'Inland ice.'

Fabricius

One of these few was Fabricius, a well-known Greenland naturalist who lived in the last century. From his hand we have a treatise dealing with the floe-ice and glacial phenomena of Greenland as they were then understood, which is in many ways a remarkable piece of work for the time, and gives a very good idea of the real state of things. It shows too that Fabricius must have personally visited, and to some extent explored, the 'Inland ice.'

Again, in the beginning of this century, the German mineralogist Giesecke, who travelled in Greenland from 1806 to 1813, made some small expeditions to the edge of the ice in the southern part of the country. In his diary he describes what he saw in enthusiastic terms, but the excursions were otherwise of little consequence.

Giesecke

A long interval of inaction now follows, during which the interior of Greenland seems to have lost all interest for the world. The general view as to the nature of the 'Inland ice' seems meantime to have been none of the clearest, and the strangest notions on the point were allowed to spring up and flourish at

DR. H. RINK

will. There was now indeed no necessity to examine more closely into the condition of things, now that it had been discovered that the unknown interior in all probability contained no wealth or material treasures. At the same time, however, there were persons who had legendary tales to tell of the existence behind the great ice-barrier of fertile tracts from which the

reindeer came and to which they resorted in the recurring seasons.

Some forty years later, or about the middle of the present century, a new era in the history of the 'Inland ice' was inaugurated by the work of a single scientist, Dr. Rink. By a series of elaborate writings, the result of many years' residence and exploration in Greenland, he drew the attention of the scientific world to this huge ice-mantle, which, instead of being as barren and devoid of interest as it had latterly been considered, was now seen to be a phenomenon of immense importance for scientific purposes. Dr. Rink pointed out among other things the enormous magnitude and thickness of the great ice-cap, and the huge masses of ice that were thrown off year after year by Greenland, the only country in the northern hemisphere which supplies the great icebergs of the Arctic seas. He has calculated, for instance, that each of the great fjords must send out into the sea not less than eight or ten million cubic feet of ice every year.

Dr. Rink

A new world was, as it were, thus laid open to science by these treatises on the 'Inland ice' and its effects. No doubt several naturalists, and among them the celebrated Agassiz, had conjectured the existence of great continental ice-sheets in actual life

and activity, but geologists were now brought face to face with the fact that Europe and America must once have been covered with an 'Inland ice,' precisely similar to that which now shrouds Greenland, to the effects of which must be ascribed the many scratches and signs of erosion that are to be seen on rocks and mountain-sides, and the many moraines and erratic boulders which are strewn over the whole of Northern Europe and often lie in the strangest situations. The doctrine of the great ice-age was thus inaugurated and a new epoch of geological history introduced.

The necessity of more extensive and elaborate investigations at the only accessible spot where the glacial forces were now actually at work on the largest scale was soon made plain, and there consequently followed a new series of attempts to penetrate to the interior of Greenland.

The series began, however, with an expedition which was not scientific in its aim, that which was sent in 1860 on the 'Fox,' under the command of the Arctic explorer Sir Allen Young, to examine into the possibility of carrying a telegraph-cable across Greenland to America.[1] There

Rae, 1860

[1] The year before too Colonel Schaffner, whose visit to Greenland I have mentioned in Chapter X., appears to have made an excursion from Julianehaab to the 'Inland ice,' under the guidance of an official of the colony, Lieutenant Höier.

seems to have been at one time an idea of landing a sledge-expedition, in charge of Dr. John Rae, who had had a good deal of sledging experience, upon the east coast, with the object of crossing the ice to the western side. The 'Fox' reached the southern part of the east coast about the middle of September, and the sledge-party could apparently have been landed here without difficulty. At this point, however, those in charge of the expedition seem to have thought better of the scheme, so the ship went round Cape Farewell to the west coast instead. Here, at the end of October, Dr. Rae made an attempt upon the ice in the neighbourhood of the colony of Julianehaab. From the narrative of Lieutenant Zeilau,[1] who accompanied the party for a time, one would gather that the expedition did no more than contemplate the ice from a distance, but from Dr. Rae's own account it appears that he did really set his foot upon the glacier, but was very soon brought up by 'a deep and wide crevasse that effectually stopped further progress.'[2] This, I may perhaps be allowed to say, must have been a remarkable crevasse indeed.

In October of the same year the American

[1] T. Zeilau, *Fox-Expeditionen i Aaret* 1860 (Copenhagen, 1861), pp. 156–171.

[2] See a paper read by the author before the Royal Geographical Society and the subsequent discussion. *Proceedings of the R. G. Society*, August 1889.

Arctic traveller Dr. Hayes also made an attempt upon the 'Inland ice,' although this was in the far north by Port Foulke, in lat. 78° 18′ N.[1]

Hayes, 1860

According to Dr. Hayes the party started on October 22, and returned after a lapse of six days. The first day they reached the edge of the ice, and on the second day they began the ascent. Five English miles are said to have been covered on this second day, thirty on the third, and twenty-five on the fourth, and this upon ice of the roughest kind and with the snow in an exceedingly bad condition, as the feet of the party at every step broke through the upper frozen crust. How these distances were reckoned we are, curiously enough, not told. On the fifth day again the party were forced to turn back by a terribly cold wind, and on this day accomplished a march of nearly forty miles. On the sixth and last day they reached their winter quarters. Dr. Hayes gives a heart-rending account of their sufferings from hardship and cold, a cold which, though no lower than −34° F., seems to have come near to costing them their lives.

It must strike the reader as remarkable that

[1] During the second Grinnell Expedition in 1853 and 1854, Dr. Hayes as well as Dr. Kane had had several opportunities of seeing and visiting the margin of the great Humboldt glacier. See *Arctic Explorations in the Years* 1853, 1854, 1855.

pedestrians of such strength and endurance should have made so poor a fight against the cold.

The description of this expedition, on the scientific importance of which Dr. Hayes is inspired to add a special chapter, can scarcely fail to rouse the suspicion of the wary and thoughtful reader. All who have any intimate knowledge of the subject will see without much reflection that it is a simple impossibility to march even twenty-five, to say nothing of thirty and forty, miles a day on snow and ice in the condition which Dr. Hayes describes, and at the same time to haul the necessary baggage for a party of men on a single sledge. It must be remembered too that Dr. Bessels, of the 'Polaris' expedition, has pointed out the inaccuracy of Dr. Hayes' determinations of latitude, and shown that he cannot have advanced so far to the north as he claims. These are grave considerations when the trustworthiness of a scientific report is in question, and they warn us against drawing any important conclusions from Dr. Hayes' record.

Whymper, 1867

In 1867 the well-known English traveller and Alpine climber Edward Whymper made an ascent of the 'Inland ice' from a little fjord, Ilordlek, lying to the north of Jakobshavn and near lat. 69° N. Whymper, as others before him have done from very early times, as the passage from

'Kongespeilet,' which I have already quoted, clearly shows, had conceived the idea that there might be a certain amount of bare land in the interior of Greenland which was sufficient to attract migrant herds of reindeer, and at the same time that it was not impossible that the peninsula might be 'broken up into detached masses, or archipelagoes, such as are found throughout the Arctic circle: the distance from the east to the west coast of the continent' being 'sufficiently considerable to admit of the existence of large unknown fjords and arms of the sea.'[1]

To penetrate to these possible oases was therefore the explorer's object, and his journey of 1867 seems to have been at first regarded as preparatory to a future expedition on a larger scale.

Whymper arrived at Jakobshavn on June 15, and three days later, accompanied by a number of Eskimo, he started for the 'Inland ice,' which he reached in the southern arm of Ilordlekfjord, some twenty miles to the north of the colony. The object was to see whether this spot were favourable for an ascent of the ice, and whether sledges and dogs could be used for the purposes of the expedition. The first view showed the surface of the 'Inland ice' to be much smoother and far less

[1] 'Explorations in Greenland,' by E. Whymper, in *Good Words*, January, February, March, 1884.

formidable than had been expected. The party ascended it and advanced without difficulty, finding the snow harder and better to walk upon the farther they went. When they had pushed in some six miles, and reached a height of about 1,400 feet, and the surface appeared to them to be equally good as far inwards as they could see, they considered that the object of the excursion had been attained, and that there was nothing to be gained by advancing farther. They were convinced that the snow-field was eminently fitted for dog-sledging, and the Eskimo declared that they could easily drive thirty-five or forty miles a day. They all turned back with the best hopes of success, 'for there appeared to be nothing to prevent a walk right across Greenland.'

However, as at Ilordlek the ice does not quite come down to the water's edge, Whymper determined to look for a suitable spot where this was the case, so that he might take to the ice at once and avoid the transport of his baggage over land. So between June 24 and 27 he made another excursion to the edge of the ice-field, this time to 'Jakobshavns Isfjord,' as it is called, which lies to the south of the colony. Here, however, the ice was so fissured and rough that any transport by means of dog-sledges would have been impossible, and therefore the spot

which they had first visited was decided upon as the starting point of the expedition.

A number of preparations were, however, necessary, and in his attempt to carry out these Whymper was met by difficulties which proved almost insuperable. Just at this time the coast settlements were visited by an epidemic lung-disease, which attacked and carried off old and young alike. Out of the 300 inhabitants of Jakobshavn no less than one hundred were ill, and all activity was necessarily paralysed. Unluckily too another epidemic had just been working havoc among the dogs. The neighbourhood had been almost swept clean of serviceable animals, and it was a most difficult task to gather together a sufficient number. Then again, though Whymper had brought with him from England materials for his dog-sledges, the few capable carpenters had their hands quite full of work in the fabrication of coffins for the victims of the plague. The only thing to be done was to take the ordinary Eskimo sledges, which were made of inferior materials and by no means fitted for the work they would be required to do. For the dogs' food a quantity of Hudson Bay pemmican had been brought, but, as it was now found that the Greenland dogs refused to eat this preparation, a supply of dried seal's flesh had to be scraped together from one quarter

and another. This again was by no means an easy task, since most of the best catchers were ill of the epidemic and something like a general famine prevailed.

At last, however, most of these obstacles were overcome in one way or another, and on July 20 the expedition was ready to start. The party consisted of five members, Eskimo and Europeans, in addition to Whymper himself, one of the latter being the English traveller Dr. Robert Brown. Two days or so were spent in carrying the baggage up from the fjord to the edge of the ice, and three more in waiting for more favourable weather.

Meanwhile Whymper ascended one of the neighbouring heights to obtain a view over the ice, and was most unpleasantly surprised to find that the surface had completely changed its aspect. When he had seen it a month before there had been a covering 'of the purest, most spotless snow,' but this had now melted away 'and had left exposed a veritable ocean of ice, broken up by millions of crevasses of every conceivable form and dimensions.' With this covering of snow disappeared all Whymper's fairest prospects.

However on July 26, as the weather was now better, an attempt was made to push over the ice eastwards. But after advancing for a few hours and having covered only a couple of miles of ground,

the party were brought to a standstill by the breaking of one of the runners of a large sledge, by the splitting of another on one of the smaller, and the general dilapidation of the rest owing to the rough treatment to which they had been exposed.

Whymper at once saw the impossibility of pushing on, but as a matter of form sent three of his party a mile or two farther to see if the ice were likely to be better, though he knew that for many miles it must be much the same.[1] The detachment on their return reported things worse rather than better, and the whole party therefore turned their faces towards home.

The result of the visit to Greenland was that Whymper's belief in the existence of bare land in the interior of the continent was considerably shaken, and in 1871, in his book 'Scrambles among the Alps,' he writes, 'The interior of Greenland appears to be absolutely covered by glacier between 68° 30′–70° N. lat.;' and the fact that at his last attempt he had seen the crevassed glacier ice extending as far inwards as the eye could see led him to the conclusion that there must be a considerable extent of ice- and snow-field still farther in, since 'such a vast body

[1] Dr. Robert Brown, who was one of this party, has written some account of the expedition in Petermann's *Mittheilungen* (1871, p. 385), where he makes the strange statement that they saw in the interior a 'nunatak,' or island, which is now completely surrounded by ice, but which within the present century has been not only accessible in 'kayaks,' but even inhabited.

of glacier requires an enormous snow reservoir for its production.' He also estimated the height of the most distant part of the 'Inland ice' within view at 'not less that 8,000 feet,' an elevation which, though somewhat too high, cannot be very far from the truth.

Nordenskiöld 1870

With the journey which was undertaken in 1870 by Baron Nordenskiöld and Professor Berggren a new period in the history of glacier-exploration in Greenland begins. This was the first time that any traveller had penetrated a considerable distance beyond the outer margin of the 'Inland ice' and spent several days in succession encamped upon its surface, while this was furthermore the first expedition of the kind to produce results of real scientific importance.

On July 19, 1870, the two Swedish travellers, together with two Greenlanders, passed the edge of the ice in the northern arm of Aulatsivikfjord, which lies to the south of Egedesminde, or near lat. 68° 20′ N. Provisions were taken for thirty days, but there was no tent and the members of the party had to sleep in two bags, which were open at both ends and contained two persons each placed feet to feet. This bed, however, proved cold as well as uncomfortable when the ice beneath was rough.

The whole equipment was to be hauled on one

sledge, but the party had not advanced far before they found that it would be an impossibility to drag so heavy a load over the rough ice. On the second day, therefore, Nordenskiöld determined to leave a portion of the provisions and the sledge behind. The rest of the things were carried on their backs and the party proceeded on their way inwards.

On July 21 they had advanced half a degree of longitude from their starting-point at the fjord and were 1,400 feet above the sea. Here the Greenlanders refused to go farther and next morning returned home. The two energetic Europeans, however, were not satisfied, and went on alone for two more days.

On July 22 they were at a point in lat. 68° 22′ N. and 56 minutes of longitude east of their camping-place on the fjord, and had mounted to a height of nearly 2,000 feet. The next day, July 23, they stopped for the night in lat. 68° 22′ N. and 20 minutes farther to the east, and, curious to say, at a height of only 1,900 feet, or somewhat lower than they had been the preceding day.

Scarcity of provisions now made a return necessary, but in order to obtain a view over the ice-field farther east the two travellers mounted a ridge some distance in, leaving all their baggage meantime behind at the camping-place. From this elevation

they could see that the plateau went on continually rising, and was unbroken by any range of peaks, so that the view to the east, north, and south was limited by a horizon of ice almost as level as that of the sea. The turning-point was 2,200 feet and about 83 minutes of longitude, or 35 miles, to the east of the northern arm of Aulatsivikfjord. The daily average of distance traversed was about seven miles. On the night of July 25 they reached the original starting-point by the fjord after having spent seven days altogether upon the 'Inland ice.'

The aspect of the ice passed over in the course of this march was circumstantially described as well as illustrated by drawings taken by Berggren on the way. The surface was either furrowed by deep and sometimes broad crevasses, or consisted of ridges and hollows, the former as much as forty feet in height and with sides sloping at angles of from twenty-five to thirty degrees. Another great hindrance to quicker progress was the number of rapid streams which flowed in deep channels in the surface of the ice and often could not be crossed. These rivers generally ended in great holes, or so-called 'glacier-wells,' into the dark-blue depths of which they were precipitated in roaring cascades. At one spot the travellers also found a kind of spring or fountain, or 'an intermittent column of water mixed with air,'

which was projected upwards. Many small lakes and pools too were found, which had no apparent outlet, in spite of the numberless rivers they received. 'When one laid the ear down to the ice one heard from all sides a peculiar subterranean murmur from the streams enclosed below, while now and again a single loud cannon-like report announced the formation of some new crevasse.'

During the whole journey the weather was bright. The temperature, taken a little above the ice, rose in the day 'to 45° or 46° F. and in the sun to 75° or even 85° F. After sunset, on the other hand, the pools of water froze and the nights were therefore cold.' These observations are in a small way a counterpart of the remarkable changes of temperature which we were destined to experience.

One of the most remarkable results of this expedition, a result which attracted much scientific attention, was the first description of the so-called 'glacial dust' or 'cryoconite,' a fine grey powder which was found strewn on the surface of the ice as far as the travellers penetrated. Owing to the absorption of warmth from the sun, this dust had sunk into the ice and led to the formation of perpendicular cylindrical holes, from one or two feet deep, and from a couple of lines to a couple of feet in diameter. These holes lay so thick that one might

look in vain for a place between them which would contain the foot, to say nothing of the sleeping-bag. At the bottom of the holes, which were always full of water, the dust lay in a deposit some millimètres in thickness.

To this dust Nordenskiöld ascribes great significance, as he considers it to be of cosmic origin, and it has helped to inspire him with a new theory as to the constitution of the earth, which, he thinks, must be, at least partly, formed and continually supplemented by an almost unappreciable but still constant reinforcement of cosmic dust from the surrounding universe. Other scientists have, however, subsequently shown that this powder in its constitution has a remarkable resemblance to the materials of the mountains of the coast, and therefore believe that it is mere dust blown from them on to the ice. One fact that seems to support this latter view is that the farther one penetrates into the interior and leaves these mountains behind, the more the quantity of the dust decreases. And furthermore, on the east coast of the continent by Umivik, where bare land almost disappears, we found scarcely any dust upon the ice at all.

The year after this important piece of exploration, or in 1871, the Inspector of North-West Greenland, Krarup Smith, sent out an expedition to the interior

under an Assistant in the Greenland Trade Service, named Möldrup, but it seems for some reason or other to have returned without having effected its object.

Möldrup, 1871

The next year, 1872, Whymper came again to Greenland and explored the district to the north of Disco Bay and by Umanak Fjord. This time he made no attempt upon the 'Inland ice,' but confined himself to ascending peaks at its margin for the purpose of getting a view of the interior plateau. On August 18, for instance, he ascended Kelertingouit, a mountain near Umanak and 6,800 feet above the sea. From the summit he had an extensive view over the plateau, and saw, as on his previous visit, 'a straight, unbroken crest of snow-covered ice, concealing the land so absolutely that not a single crag appeared above its surface.' With a theodolite he measured the angle to the apparent summit of the ridge, and came to the conclusion that it must be 'considerably in excess of 10,000 feet.' Whymper seems now to have convinced himself that no bare tracts of ground could exist in the interior, for he says that the investigations made at various spots 'render it a matter of all but absolute certainty that the whole of the interior from north to south, and east to west, is entirely enveloped in snow and ice.'

Whymper, 1872

The attention first aroused by Dr. Rink's writings on the 'Inland ice' of Greenland had by this time produced good results. Owing to investigations in the Alps and Scandinavia as well as in Greenland itself, the study of glaciers and snow-fields, of their work and all phenomena connected with them, had advanced with rapid steps, and the doctrine of the ice-age had taken a definite form and definite proportions.

Meanwhile the idea had also gradually developed that the great ice-sheet which had formerly shrouded Scandinavia and the whole of the north of Europe had not merely covered that tract of country, but had to a large extent helped to give it its present outward form and appearance. It was now understood that the ever-moving glaciers had not only carried away with them and distributed elsewhere soil, grit, stones, and all the loose material that lay beneath them, but had also by their eroding and quarrying power helped to cut deep fjords, basins, and valleys where they rested on the solid rock, forming together with other agents all the features of such a landscape as we have in Western Norway at this day.

This theory was strongly urged by the Scotch geologist Ramsay, and one piece of evidence which spoke forcibly in its favour was that countries which

are cut up into a complex of fjords and valleys like Scandinavia are only to be found where marks of glacial action are also evident. The view, however, found many opponents among geologists, one of whose strongest arguments was that all the glaciers known and investigated in Europe had so small a rate of progression that the erosion which they could produce could not by any means be held sufficient to account for the gigantic results attributed to them. An advance at the rate of a couple of feet in the twenty-four hours had been observed, but this speed was quite exceptional.

Helland, 1875

In 1875 the Norwegian geologist Amund Helland, who had taken special interest in the marks of the ice-age as shown in Norway, and in this connexion had drawn attention to many remarkable phenomena, paid a visit to North Greenland to measure the rate of movement of the glaciers and to see the results they were producing there. During the months of June, July, and August his investigations covered that portion of the coast which lies between the colony of Egedesminde, in lat. 68° 42′ N., and the fjord of Kangerdlugssuak, in the Umanak district, or near 71° 15′ N. He visited five of the so-called 'ice-fjords' and a number of minor glaciers, as well as Hartdlek, or Hordlek, Fjord, the glacier of which does not reach the sea. Here he

also ascended the 'Inland ice,' at about the same spot where Whymper made his ascent.

The result of this journey was in one respect at least surprising. Instead of the low rate of glacier-movement already known, which amounted to a couple of feet at most in the day, Helland found that the great glacier in the 'ice-fjord' of Jakobshavn had a rate of progress reaching as much as sixty-four feet in the day. Another glacier in Torsukatakfjord was more moderate certainly, as it advanced little more than thirty feet in the same time. Here were quite new factors for the calculations of those geologists who had ascribed to the ice so large a share in the making of fjords, lake-basins, and valleys. Many, however, refused to believe in the accuracy of these observations, but they have been more than established by subsequent investigations.[1] Helland's discoveries on the whole went far to support the glacial theories generally, but, as I shall come back to this subject in a separate and final chapter, I will say no more about them for the present.[2]

[1] Among these, the elaborate investigations of Lieutenant Hammer in Jakobshavns 'Ice-fjord' deserve especial mention.

[2] A. Helland, 'Om de isfyldte Fjorde og de glaciale Dannelser i Nordgrönland,' in *Archiv for Math. og Naturvidenskab*, vol. i. (Christiania, 1876). See also an article by the same writer in the *Quart. Journ. Geol. Soc.* for February 1877, pp. 142–176, 'On the Ice-Fjords of North Greenland, and on the Formation of Fjords, Lakes, and Cirques in Norway and Greenland.'

In 1875 Dr. Rink had discussed the possibility of exploring the interior of Greenland, and it was his opinion that a crossing of the peninsula from west to east would be a most important undertaking. 'I think,' he wrote, 'that it must be done with sledges hauled by men, and that two small ones ought to be constructed in the most careful way and furnished with every necessary. Besides the scientific conductor of the expedition and his assistant, I should say about four Europeans would make the proper complement.'[1] This idea agrees, as will have been seen, in several particulars with my scheme, but, curiously enough, I had never come across this passage till I returned from Greenland. Rink, however, chose the west side of the country as the starting-point and recommended the district to the north of Fredrikshaab for the ascent of the plateau.

In the following year, 1876, the Danish Government instituted a series of scientific investigations in Greenland, which have been continued systematically to the present time. These investigations, commonly known in Denmark as 'De geologiske og geografiske undersögelser i Grönland,' have produced results of great value and interest, a great part of which are recorded in 'Meddelelser om Grönland,' a work

[1] 'Ueber das Binnenland Grönlands und die Möglichkeit selbiges zu bereisen,' Petermann's *Geogr. Mitthcilungen*, 1875, pp. 297–300.

issued periodically by the board of commissioners officially charged with the undertaking.

As would be expected, the exploration of the 'Inland ice' was among the most important objects which the new organisation had in view, and the expedition sent out in its first year, in charge of the geologists Steenstrup and Kornerup, and Lieutenant G. Holm, were commissioned, among other things, with an investigation of the edge of the ice-field in the district of Julianehaab.[1] It was proposed that the party should make their way some little distance in to a group of 'nunataks,' which were known as the 'Jomfruer' and were marked on the maps of Greenland, in order to examine the surrounding ice and see whether it would make a suitable starting point for a subsequent expedition on a larger scale. They were stopped at the outset by the general roughness of the ice and the size of the crevasses, and therefore confined themselves to measuring the movement of the ice in three glaciers, the highest rate which they recorded being some twelve feet in the twenty-four hours.[2]

Holm, Steenstrup and Kornerup, 1876

The next expedition was sent out in the following year, under Steenstrup and Lieutenant J. A. D.

[1] *Meddelelser om Grönland*, Part I., p. 6 (Copenhagen, 1879).
[2] *Ibid.* Part II., pp. 1-27 (Copenhagen, 1881).

Jensen, to the northern part of the district of Fredrikshaab. The party were instructed to make a general examination of the coast and, if possible, to penetrate some distance into the 'Inland ice' in the neighbourhood of the glacier known as 'Fredrikshaabs Isblink,' or at some other convenient point. This was just the spot which Dr. Rink had recommended two years before. The attempt, however, was frustrated by unsettled weather.[1]

Jensen and Steenstrup, 1877

The expedition which followed in 1878 met with more success. This time the party were under the command of Lieutenant Jensen, and consisted of the geologist Kornerup and an architect named Groth, together with an Eskimo of the name of Habakuk. 'Fredrikshaabs Isblink' was again the base of operations. On July 3 the party made their way up to the 'nunatak' Nasausak, which lies on the south side of the glacier and is some 4,700 feet above the sea. This is one of the group known as 'Dalager's Nunataks,' and the ascent, which was otherwise of little importance, is of interest from the fact that it was made over the same ground which the enterprising old explorer had traversed.

Jensen, 1878

Here, however, the condition of the ice was considered unsuitable for more extended investigations,

[1] *Meddelelser om Grönland*, Part I., p. 8 (Copenhagen, 1879).

and another attempt was made from a fresh starting-point, Itivdlek, on the north side of the glacier.

For this expedition careful preparations had been made. Provisions were taken for three weeks, and the whole equipment, which weighed about four hundredweight, was distributed upon three small sledges, each to be drawn by one man and weighing alone somewhat more than twenty pounds. As snow was expected in the interior, four pairs of 'ski' and four of Indian snowshoes were taken.

A start was made on July 14, the four whom I have already named being accompanied for some distance by four Greenlanders—one man and three women. The ice was found to be exceedingly rough, and progress proved slow and difficult. Lieutenant, now Captain, Jensen has given in his report [1] a graphic account of the many hardships and difficulties against which the party had to contend, among them being an attack of snow-blindness, from which they all suffered more or less. Consequently they advanced by short stages, and it was not till July 24 that they reached the group of 'nunataks' which Dalager had supposed to be the mountains of the east coast. These were about forty-five miles from the starting-point of the expedition and twenty or so from the

[1] *Meddelelser om Grönland*, Part I., p. 54 *et seq.* (Copenhagen, 1879).

nearest point on the margin of the ice-field, and they are now known as 'Jensen's Nunataks.'

On the largest of these exposed peaks, the base of which was rather more than 4,000 feet above the sea, the party were detained for a week, owing to a snow-storm. On July 31 they were able to set out upon the return journey, and the same morning Captain Jensen ascended the peak. From its top, which was some 5,000 feet above the sea, he had a good view to the east over the expanse of the 'Inland ice,' which seemed to rise uninterruptedly as it stretched away inwards and ended in a horizon of considerably higher elevation than the point on which he stood. On the evening of August 5, or after an absence of twenty-three days in all, they returned to their camping-place at Itivdlek, where they were warmly welcomed by the Eskimo there waiting for them.

This journey is among the most interesting that have been recorded in connexion with the 'Inland ice.' The results of the expedition were of great importance, and valuable information was brought back as to the condition of the ice and its movements in a tract full of projecting peaks and rocks, as to the geological nature of these rocks and the organic life to be found upon them, as well as a large number of sketches drawn by two of the party.

The great obstacles with which this expedition

had to contend, and which seemed to point to the absolute inaccessibility of the interior, deterred the Danish Commissioners from organising any fresh attempt in this direction, though the crossing of the continent from west to east had been their original idea, and Jensen's journey was really only a preparatory reconnaissance of the ground.

Since this year their efforts have been confined to explorations along the edge of the ice-field, to short journeys into the near-lying 'nunataks,' and measurements of the movement of glaciers. The results have been valuable and interesting, one of the most noteworthy being the observations of Lieutenant C. Ryder in August 1886, when he recorded in the Upernivik glacier in Northern Greenland a daily advance of no less than one hundred feet.

In 1880 the Swedish geologist Holst travelled in the south of Greenland and ascended the 'Inland ice' at several points. The object of his journey was mainly to investigate the 'glacial dust' or 'cryoconite' of Nordenskiöld, which he found to be composed of the same substances as the mountains of the coast, and therefore believed to be dust blown from them on to the ice by the wind.

Holst, 1880

But though the Danes had apparently abandoned all attempts to explore the interior or cross the continent, one of the most important expeditions on the

great ice-field was yet to come, that of Baron Nordenskiöld in 1883. The indefatigable Arctic explorer was not content with his first journey in 1870, and now made a second attempt to remove the veil which still hid the secrets of the mysterious interior. He, like Whymper, was possessed with the idea that in the 'Northern Sahara,' as he called it, there might be oases not only bare of snow, but possibly as well wooded as the tracts which border upon the cold pole of Siberia. Though no earlier explorer had been able to discover any limit to the desert of ice and snow on its eastern side, he held that there were many arguments which went to show that, generally speaking, it would be a physical impossibility for a large continent to be entirely covered with a mantle of ice in the climatic conditions which prevail elsewhere upon the globe to the south of lat. 80° N. As to the interior of Greenland, he maintained that there was no difficulty in proving that the conditions indispensable for the formation of glaciers could not exist there unless the country rose gradually on the east and west alike, and thus had the form of an inverted basin or trough with sides sloping slowly and regularly from the sea.[1]

Nordenskiold, 1883

To this surprising conclusion Nordenskiöld was

[1] Nordenskiöld, *Den andra Dicksonska Expeditionen till Grönland* (Stockholm, 1885), p. 89 *et seq.*

led by the argument that for the formation of an ice-field or glacier a certain amount of snow or rainfall is necessary, and that the amount deposited in the interior of Greenland cannot be sufficient for the purpose. All the air, he considered, which came from the surrounding seas, and ought to bring moisture with it, had first to pass the ranges of high mountains which bordered the coast. As it passed up their sides it would become cooled, and as it rose become expanded owing to the diminished atmospheric pressure, and thus it would be compelled to deposit most of its moisture at the outset. In so doing again it would set free its latent heat and itself grow warmer, while as it descended on the far side of the mountains and the atmospheric pressure increased, its temperature would rise still higher. In this case it would reach the valleys and depressions of the interior in a dry and warm condition just like the well-known 'Föhn' winds of Switzerland. Thus the sea-winds of the coast of Greenland would deposit their moisture, generally in the form of snow, on the outer ranges of mountains, while all the wind that reached the interior, whether from east, west, north or south, must arrive there dry and comparatively warm, unless the continent were orographically different from all the other countries of the globe. In the interior therefore, concluded Nordenskiöld,

'the snowfall can scarcely be sufficient to maintain a permanent mantle of ice.'

This chain of reasoning could no doubt within certain limits find justification, if one really had such a country to deal with, a country surrounded on all sides by high coast-mountains and with a flat interior of comparatively low elevation. Of such a country, however, we can scarcely be said to have an example on a large scale, and such an orographical structure we could expect to find anywhere rather than in Greenland.

On the other hand, when Nordenskiöld maintains that the geological phenomena of Greenland point to an orographical structure similar to that of the Scandinavian peninsula, a land of high ridges and peaks with intervening valleys and plains, I am fully prepared to agree with him. But in that case the climatic conditions of the interior must be quite sufficient to allow of the formation of an ice-cap, for where in Scandinavia is there not moisture sufficient for the purpose if only the necessary temperature were forthcoming? The great Swedish explorer seems almost to have forgotten that we have at this very day glaciers and snowfields on a small scale in the interior of Scandinavia, and that there are many others in spots far removed from the sea; and furthermore that these, which are now mere remnants, must once have been of enormous

dimensions and have enveloped whole continents. But here, perhaps, Nordenskiöld would answer that it is this very assumption that he disputes, and would contend that these great ice-fields of the glacial period never did cover the interior of a continent in one unbroken sheet.

This expedition of 1883, which was intended to push through the ice-belt to the east coast as well as explore the interior, was, like Nordenskiöld's first expedition in 1870, due to the liberality of Baron Oscar Dickson, of Gothenburg.

The ascent of the ice began on July 4, at about the same spot as the previous attempt in 1870, or a little to the south of Disco Bay. The party consisted of ten, two of whom were Lapps, who came provided with their 'ski.' For two or three days they were helped with the transport of their baggage over the first rough ice by the officers and crew of their own vessel, the 'Sofia.'

In the course of eighteen days Nordenskiöld advanced about seventy-three miles and reached a height of nearly 5,000 feet. On July 21, however, he was compelled to stop on account of the wetness of the snow, into which sledges and men sank alike. Before he turned back he sent his two Lapps on into the interior on their 'ski.' Though the party had as yet seen nothing but ice and snow, and were in the

middle of a huge ocean-like expanse which suggested no hope of change. Nordenskiöld still had the courage of his opinions, and gave the Lapps orders, in case they came upon bare ground, to collect specimens of all the plants found growing there.

On July 24, or after fifty-seven hours' march, the Lapps returned and reported that they had been 230 kilomètres, or about 145 miles, into the interior, and had reached a height of some 5,850 feet. As far as they could see, the surface was an endless, unbroken tract of snow. As I shall have occasion to point out later, there are several reasons for believing that the Lapps rated the distance they had covered far too highly, apart from the extreme difficulty of travelling so rapidly over such snow as the surface of the 'Inland ice' affords.

On the following day, July 25, the return journey was begun, and on August 3, after thirty-one days upon the ice, the party reached their camping-ground by 'Sofias Hamn' upon the northern arm of Aulatsivikfjord. The Eskimo, who were waiting for them here with provisions, clothes, and other things, were no less rejoiced than astonished to see them again. They had regarded them as lost beyond hope, and, as they declared, had worn out many pairs of boots in climbing the mountains to look for them.

The ice over which the travellers had passed was

in many respects remarkable. At first certainly it had been rough and often full of crevasses, but on the whole it was less broken and uneven than that which their predecessors had described. They had found too, when they had advanced some way, an immense flat expanse of snow which showed no sign of either ice or crevasse and stretched as far as the eye could see. The expedition, even apart from the Lapps' journey on their ski, had penetrated farther into the interior than all its predecessors, and had reached for the first time the plain of snow which we are now justified in supposing must cover the whole of the interior of Greenland.

It was, as I have already said, the news of this achievement which finally determined me to adopt the plan after which our own expedition was carried out.

One would be inclined to think that Nordenskiöld's own exploit had made the existence of any inland oases extremely improbable. This seems, too, to have been his own view immediately after his return, though he subsequently fell to doubting again, and began to consider it at least possible that in the journey of 1883 he and his companions had followed a broad belt of ice which extends across the country in the parallels of lat. 69° and 70° N.[1]

[1] Nordenskiöld, *Den andra Dicksonska Expeditionen till Grönland* (Stockholm, 1885), p. 129.

To the north and south of this belt he considered that there might be oases free of ice. One piece of evidence that might be held to support this view he saw in two ravens which had come flying from the north towards the Lapps, and had turned back again as soon as they reached their tracks in the snow. As these birds are not in the habit at this time of year of straying far from their nesting-places in the mountains along the coast, Nordenskiöld thought that this was a substantial argument in favour of the existence of bare land somewhere to the north. This might possibly be by the shore of a sound or channel, which he thinks may cross the whole country from the neighbourhood of Jakobshavn on the one side and perhaps to Scoresby Fjord on the other. The ends of this channel may, in the course of the last few centuries, have been blocked by masses of ice given off by the glaciers there situated.[1]

The tradition of this sound comes from Hans and Paul Egede, who report a legend on the subject current among the Eskimo, and the same idea has appeared again and again in one form or another ever since Greenland was rediscovered in the sixteenth century.

[1] Nordenskiöld, *Den andra Dicksonska Expeditionen till Grönland* (Stockholm, 1885), pp. 233–235.

First came the mythical 'Frobisher Strait' and 'Beare Sound,' which were supposed to exist in the south of Greenland, and were marked upon all the maps of the day. These arose from the fact that Frobisher had made a number of discoveries among the North American islands on the western side of Davis Strait without knowing exactly where he had been. This gave rise to the belief that it must have been Greenland that he had explored, and to Greenland, therefore, the channels and islands which he described were attributed. It was soon made plain, indeed, that he had not been to Greenland, but to the coast on the other side of Davis Strait, but the belief in the existence of a 'Frobisher Strait' across the south of Greenland was nevertheless maintained for many years. Thus even in Cranz' 'Historie von Grönland' of 1765 an account is given of a sound crossing the south of the continent, as well as of that which was supposed to traverse it farther to the north. Hans Egede had no faith in the former of these two channels, as he could find no trace of it whatever, and he therefore omits to mark it upon the map given in his book 'Det gamle Grönlands nye Perlustration,' which was published at Copenhagen in 1741. But, on the other hand, both he and his son Paul fully believed, as I have said, in the existence of the more northerly channel

from 'Jakobshavns Isfjord' to some point on the opposite coast. This is set off upon his map, and Paul Egede also has it on his map in the 'Efterretninger om Grönland' of 1788. A facsimile of this is given by Nordenskiöld in his account of the expedition with which we are now concerned.[1]

I have no intention of entering upon a discussion here as to the possibility of the existence of this long narrow channel, a parallel to which can scarcely be found upon the globe, but it seems to me at least that the whole orographical structure of Greenland makes such a phenomenon extremely improbable.

Peary and Maigaard, 1888

The last expedition to the 'Inland ice' previous to 1888 was that of Robert Peary, of the United States Navy, and Christian Maigaard, a Danish official in the Greenland Service, which was undertaken in 1886.

Peary speaks of the journey as a preliminary reconnaissance.[2] It was originally intended to make use of sledges and dogs, but the Eskimo who had been retained for the purpose deserted the travellers at the eleventh hour, and took the dogs and sledges with them. The two Europeans were therefore compelled to proceed on foot and alone. For the

[1] Nordenskiöld, *Den andra Dicksonska Expeditionen till Grönland* (Stockholm, 1885), p. 234.

[2] *Bulletin of the American Geographical Society*, vol. xix. (New York, 1887), pp. 261–289.

first few days, indeed, they had the help of one man and one woman, but neither of these could be persuaded to do much more than set their feet upon the ice.

The starting-point was the head of Pakitsokfjord, or perhaps I should more correctly say Ilordlekfjord, in lat. 69° 30′ N. This was the very fjord where Whymper had made his attempt, and where the Norwegian geologist Helland had also been upon the ice.

The actual ascent of the ice began on June 28. The provisions, which were calculated to last thirty days, and the rest of the equipment were hauled on two 'nine-foot sledges, thirteen inches wide, made of hickory, steel, and hide, on a modified Hudson Bay pattern, and weighing complete twenty-three pounds each.' One pair of 'ski' and one pair of Indian snowshoes each were taken, and these seem to have been in frequent use. There was no tent, but a shelter was made of a tarpaulin and the two sledges. The travelling was done by night and the sleeping by day, and for a time, while the state of the snow permitted it, snow-huts were built every day.

On the evening of July 2, when the two had already been weatherbound for two days, they determined to return to the camp by the fjord and wait for a change, but left the sledges and other things

behind. On July 6 they rejoined their baggage, and went on their way inwards, after leaving a deposit of provisions sufficient for a week. Next morning, as they were crossing a little lake with a thin covering of ice, Maigaard's sledge went through. It was recovered, but Maigaard states that the amount of water which his baggage took up made the load at least a hundredweight heavier than before, and it was only with difficulty that he could now drag it.[1]

During the greater part of the journey the temperature was below freezing-point, and the snow consequently in a good condition for the use of 'ski.' On the night of July 12 the thermometer even sank as low as to 7° F. (−14° C.). On July 9, however, there had been an unpleasant change in the weather, as a wind from the south-east caused the temperature to rise from 21° F. to 46° F., and made the snow wet and sticky. There seems to have been a typical 'föhn' wind blowing over the 'Inland ice.'

On July 11 another deposit of provisions and other things was left behind, a height of 5,000 feet having now been reached.

On July 17 the elevation was 7,525 feet, and the distance from the edge of the ice, according to a

[1] *Geografisk Tidskrift*, vol. ix. p. 90 (Copenhagen, 1888). This would make more than ten gallons of water, which is no small quantity to be absorbed in such a way. We are not told what the baggage contained that could have taken in so large an amount.

longitude reckoned by Peary, somewhere about a hundred miles. Here the two travellers were delayed by a snowstorm till July 19, when the weather cleared sufficiently to allow of an observation being taken at mid-day. In the evening they turned back, and, as they now had the wind behind them, they lashed the two sledges together, and rigged up a vessel with alpenstocks for a mast, a tarpaulin for a sail, and a 'ski' with an axe attached to serve as a rudder.

On this craft they sailed, according to Maigaard's calculations, some twenty-seven miles the first night, thirty-two the second, and fifty-four the third, while after this they were obliged to take to hauling again on account of the roughness of the ice. On the morning of July 24 they were once more at their camping-place by the fjord, after having spent twenty-three days in all upon the ice.

The ice these two passed over was, with the exception of the first part, very level throughout, and more so even than that which Nordenskiöld had traversed in 1883. There were not many crevasses, and for the greater part of the way the surface was covered with a layer of dry snow, into which, at the extreme point which they reached, Peary could drive his staff six feet deep. This state of things must have made progression very much easier than usual.

Unfortunately, Peary's longitude was only based,

as it seems, on some observations of altitude taken with the theodolite about noon on July 19. The expression 'circum-meridian sights,' which both he and Maigaard use, is not quite clear in itself. These so-called 'simple altitudes' are, besides, notoriously uncertain for longitude reckonings. The chronometer, too, had come to a standstill, and an ordinary watch, which Peary declares to have been very trustworthy, was used in its place; but, as far as I can see from his account, no observations were taken subsequently by the coast to determine this timekeeper's accuracy.

The distance of a hundred miles from the margin of the ice cannot, therefore, be considered as established beyond all doubt. The days' marches again, which are said by Maigaard to have often been between twelve and eighteen miles, may strike the reader as somewhat long. I know well from my own experience that a great deal of work is necessary to cover so much ground with a heavy sledge in tow, if the gradient be ever so little against one.[1]

[1] It is difficult to say, too, what faith we can place in this elevation of 7,525 feet, as it was only based upon the records of an aneroid barometer. Though we had with us three particularly good aneroids made specially for us in London, we should regularly have estimated our elevation much too high, if we had not had a boiling-point barometer to correct our daily observations. As these latter observations had not then been worked out, this is exactly what I did when I sent off my letter from Godthaab to Herr Gamél. All our three aneroids sank and rose very regularly, and in full harmony with each other, and when we reached the west coast returned to almost exactly the

However all this be, the expedition is one of the most noteworthy that has been recorded in connexion with the 'Inland ice,' and one cannot but admire the energy and enterprise of the two travellers who did so much alone and with such small resources.

The same summer Peary visited the edge of the ice at several points farther north.

As will have been gathered already, this series of expeditions upon the 'Inland ice,' or to its edge, had gradually provided a mass of information sufficient to enable us to form a fairly accurate and complete idea of its true nature along the whole of the west coast as far as Upernivik. The two last expeditions, that of Nordenskiöld in 1883 and that of Peary in 1886, had also taught us that inside the margin of broken and fissured ice there was an extensive tract of smooth and level snow, rising gently towards the as yet unknown interior.

Thus a great gap in our general knowledge of the huge ice-field had already been filled. But there was much to be done yet, and it was to accomplish

position they had held when we left the sea-level on the other side. This shows that it will not do to attach too great importance to observations taken by the aneroid barometer alone. Nevertheless, Peary's height does not seem at all too much for the distance from the coast. We were quite as high as this when we were no more than 110 kilomètres, or 68 miles, from the east coast, and 160 kilomètres, or 114 miles, from the west; and I should be inclined to think that the gradient must be about the same between lat. 69° and 70° N.

at least a part of this that the present expedition was taken in hand.

As to the state of the ice on the eastern side little or nothing was as yet known. The Danish expedition under Captain Holm had, indeed, during their voyage up the coast seen a good deal of the margin of the ice-field, but had had no time to devote to its exploration, and, as far as Europeans were concerned, it had hitherto remained actually untrodden.[1] An investigation of its general nature on this side, and measurements of the gradients, must therefore be matters of no little importance.

Even less was known of the great interior plateau. The experiences of Nordenskiöld and Peary enabled us, no doubt, to form certain conclusions as to its aspect and nature, but these could not be regarded of much value as long as it remained unvisited. There were still authorities who maintained that it might not be absolutely covered with ice or snow. Though I had myself never inclined to this view, I considered that an investigation of the altitudes and contours of the plateau, or, in other words, of the

[1] I may here mention that I have been informed by Captain Hovgaard, who commanded the 'Dijmphna Expedition,' that some few years ago he proposed to the Danish Naval Minister that the expedition then contemplated to the east coast of Greenland should be combined with a dog and sledge expedition across the continent from east to west, which he considered himself qualified to carry out with success. Little attention, however, seems to have been given to the project.

general form of the snow- or ice-cap, must be an undertaking of very great interest.

But another task, to which I attached perhaps greater importance, was the examination of the meteorological phenomena of the interior. Previous expeditions had done little or nothing to contribute to our knowledge, and I think I was justified when I wrote in the Norwegian periodical 'Naturen' that 'a series of climatic observations, of measurements of temperature, atmospheric moisture, wind-force and air-currents, of data as to snow- and rain-fall and cloud-formations, would be material of great importance to meteorology, since on these huge tracts of ice and snow the climatic conditions must be entirely different from those of any region from which we now have regular and systematic records.'[1] Nor were we disappointed, as I shall subsequently show, in our expectation of meeting with striking climatic peculiarities.

I might have added that these meteorological observations would be of importance to geology as well, for the inquirer can scarcely pronounce with authority upon the internal economy, if I may so say, of the great ice-cap, unless he be familiar with the climatic conditions which prevail upon its surface.

These I considered the most important of the

[1] *Naturen*, 'Grönlands Indlandsis' (Bergen, 1888).

problems which awaited solution in the interior of Greenland.

But of what use, it may be asked, can the solution of such problems really be? The same question has been put to many explorers, and will no doubt be repeated again and again as time goes on. There are many answers to the question, of general as well as special application. In this case the reader should bear in mind that so huge a tract of ice and snow must have a great influence upon the climate of all the surrounding regions; that, speaking more generally, every single section of the earth's surface stands in intimate and reciprocal relation with its neighbours; and, lastly, that the mere fact that the interior of Greenland is a part, and no insignificant part, of that planet on which we dwell, is quite sufficient to make us wish to know it, and to impel us to persevere until we do know it, even though our way should lie over the graves of our predecessors.

This being so, the sooner the knowledge was attained the better.

END OF THE FIRST VOLUME

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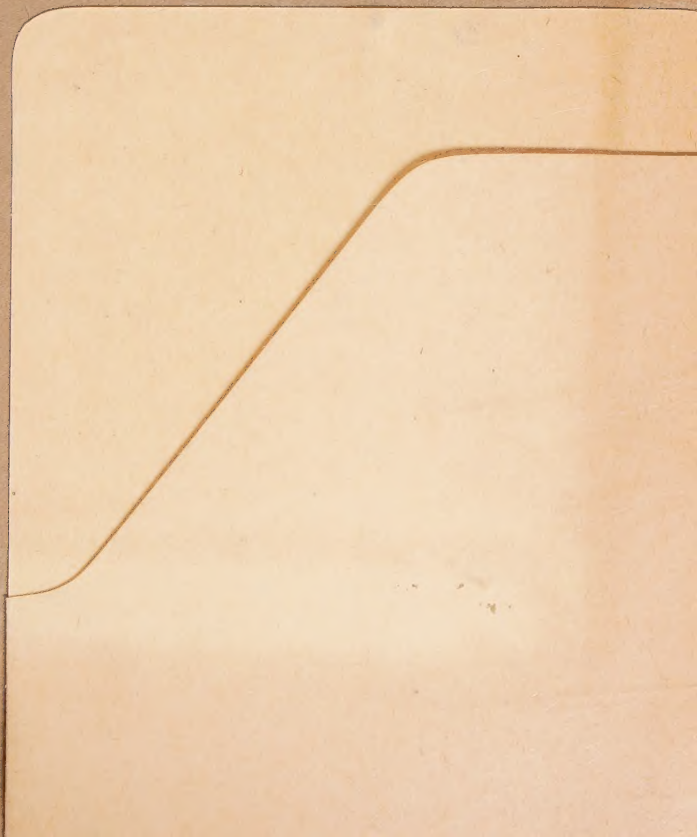
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